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ABSTRACT

The objective of this study is to develop a typology of nonverbal gestural communication behavior as evidenced by student teachers in art. An attempt is made to develop techniques for the systematic observation and analysis of such behavior. Data from a pilot study, and analysis of a video-recorded sample of 15 student teachers led to the development of a typology of seven categories of nonverbal behavior, and seven categories of terms descriptive of affective qualities. An instrument was constructed to measure the relation between student teachers' gestural behavior and reflected qualities within task-setting, demonstration, and evaluation contests. As a test of validity, the researcher and six judges used the instrument in observing three student teachers. Analysis of the data was conducted to ascertain frequency of observations relative to patterns of gestural behavior and reflected qualities, and a factor analysis was used to ascertain the influence of the instrument and the extent of independence between the constructs. Evidence supports the proposition that the constructs provide a valid and reliable index of student teachers' qualitative gestural communication behavior, and that these might be applied to teachers in all fields of education. Further research is necessary to test the reliability of the instrument. (MBM)

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FINAL REPORT

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AN INVESTIGATION OF NONVERBAL BEHAVIOR OF STUDENT TEACHERS

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J. James Victoria

The Pennsylvania State University

University Park, Pennsylvania 16802

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SUMMARY

The objective of this study is to develop a typology of nonverbal behavior and terms descriptive of qualities evoked by that behavior, and to ascertain whether student teacher nonverbal behavior can be measured and described by means of the categorization of both nonverbal gestural behaviors and affective qualities observed in video recordings of student teachers in art teaching-learning situations.

The literature dealing with nonverbal behavior and techniques used in systematic analysis of teacher behavior yielded evidence suggesting that gestural behaviors of student teachers and the qualities evoked by that behavior are subject to systematic analysis. Data from a pilot study, and analysis of a video recorded sample of 15 student teachers in art teaching-learning situations led to the development of a typology of nonverbal behavior and terms descriptive of affective qualities. The typology of nonverbal behavior consists of seven categories of student teachers' gestural behavior classified as to type and kind; i.e., Transactional nonverbal behavior characterized by Interactive and Spatial Stimulus gestures, and Non-Transactional nonverbal behavior characterized by Image Reflective gestures. Analysis of the affective qualities evoked by student teachers' gestural behavior suggested seven categories of terms descriptive of qualities on a continuum from Supportive to Unsupportive exhibited in art teaching-learning situations.

An instrument for systematic observation was constructed to measure the relation between student teachers' gestural behavior and reflected qualities within Task-setting, Demonstration, and Evaluation contexts of teaching-learning situations in art. A category system for the instrument was conceived on the basis of simultaneous categorization of student teacher gestural behavior and terms descriptive of qualities evoked by that behavior. A category plus time unit means of recording judgments was devised corresponding to the seven gestural behavior categories. To determine reliability and validity of the instrument, the researcher and six judges used the instrument in observing three different student teachers in art teaching-learning situations randomly selected from 15 video recorded samples collected for the study.

To ascertain content validity of the instrument a number of descriptive procedures were used: (1) the percentage of agreement between the researcher and six judges, (2) the percentage of agreement among the seven judges, (3) contingency coefficients for the independent categorizations of each judge with the researcher. Analysis of the data was conducted to ascertain frequency of observations relative to patterns of gestural behavior and reflected qualities. Factor analysis, as a method of construct validity, was employed (1) to ascertain whether the constructs, types and kinds of nonverbal behavior basic to the instrument accounted for the influences among gestural behaviors, and (2) to ascertain the extent of independence between these constructs relative to the three contexts in art teaching-learning situations.

Evidence gathered supports the proposition that the constructs basic to the typology of nonverbal behavior and terms descriptive of qualities used in the instrument provide a valid and reliable index of student teachers' qualitative gestural communication behavior within contexts of art teaching-learning situations.

The findings of the study serve as a theoretical basis for defining those properties of teacher communication behavior which have not previously been studied. Insight into these qualities may provide a way of dealing with teacher behavior that is more closely related to desired qualitative levels of pupil experiences in their encounters with art than other more traditional approaches used in the education of art teachers. The findings also imply that the criteria of the instrument for systematic analysis of nonverbal behavior have applicability to teachers in all fields of education, and that this analysis may be particularly appropriate to those situations consisting of pupils from diverse socio-cultural environments. The conclusions of the study suggest that there is an additional body of knowledge that can be learned by prospective art teachers and, as such, qualitative nonverbal behavior may be examined as a potentially fruitful additional dimension in art teacher education programs.

Further research is necessary to test the reliability of the instrument for systematic observation and to develop normative standards for its widespread usage. Cross validation studies of student teachers and mature teachers of art, as well as other fields, at different levels of public school education, and in diverse socio-cultural environments is recommended. Research based on the constructs used in this study is recommended in the development of techniques for systematic analysis of the interrelationships of teachers' visual and verbal qualitative communication behavior in teaching-learning situations.

CHAPTER I

INTRODUCTION

Statement of the Problem

The objective of this study is to develop a typology of nonverbal gestural communication behavior as evidenced by student teachers in art. As an aspect of the study an attempt is made to develop techniques for the systematic observation and analysis of nonverbal gestural behavior as having neutral, supportive, or unsupportive affective qualities in teaching-learning situations in art.

The basic premise underlying this study is that nonverbal gestural behavior is characteristic of all communication behavior and is also a qualitative aspect of teacher communication in the classroom. Qualitative communication is characterized by the utilization of feelings, emotions and attitudes in the expression of ideas and, as such, is a significant dimension of teacher behavior in the teaching-learning process in art.

On the assumption that the way teachers behave in teaching art is dependent on how teachers desire learners to behave, those particular behaviors relative to the nonverbal gestural communication of student teachers in art provide the focus for the study.

The study is first concerned with the identification and description of nonverbal gestural behavior and the categorization of such behavior as having neutral, supportive, or unsupportive affective qualities as evidenced by student teachers in art teaching-learning situations.

Secondly, the study is concerned with the development of techniques for the systematic observation and analysis of qualities of nonverbal gestural behavior that give evidence of reliability and validity when utilized with student teachers in art teaching-learning situations.

The Significance of the Study

One of the first assumptions to be made concerning teaching-learning situations is that the pattern of behavior of the teacher affects the pattern of behavior in the learner. One way in which the active involvement and participation of the learner is elicited is the manner in which the teacher communicates within the structure of the teaching-learning situation. Since all communication is characterized by qualitative aspects that evoke or elicit qualitative responses, whether on a conscious or unconscious level, affective teacher communication is a significant area for investigation. More specifically that aspect of qualitative communication identified as nonverbal gestural communication as it relates to teaching-learning situations in art is the focus of this study.

In recent years there has been an increasing focus by educational researchers on analyzing the patterns of both teachers' affective and cognitive verbal statements and their effects on the learning experiences of students. Much of this investigation into the nature of teacher communication behavior has involved the systematic analysis of teachers' verbal statements into categories of intent as it affects the climate of the teaching-learning situation and student behavior. The research of Anderson (2), Withall (50) and Flanders (21) has been influential in the area of classroom interaction as it pertains to the development of instruments for the systematic observation and analysis of teachers' affective verbal communication behavior.

Attention has also been given to the various nonverbal aspects of communication behavior particularly in disciplines other than education. The field of communication theory, which has drawn upon the efforts of researchers in the areas of anthropology, linguistics, psychology and psychiatry has produced evidence concerning the nature of nonverbal communication labeled body motion or gesture. Hayes (28:158) provides a summary of the basic assumptions concerning the communication aspects of body motion:

1. Like other events in nature, no body movement or expression is without meaning in the context in which it appears.
2. Like other aspects of human behavior, body posture, movement and facial expression are patterned and, thus subject to systematic analysis.
3. . . . the systematic body motion of members of a community is considered a function of the social system to which a group belongs.
4. Visible body activity like audible acoustic activity systematically influences the behavior of other members of any particular group.
5. Until otherwise demonstrated such behavior will be considered to have an investigable communication function.

In the field of art education, scholars are beginning to question what type of research is valid for and applicable to the nature of our phenomenon. Ecker (16:32) believes the focus for research in art education is "not the quantitative but its qualitative dimension." Ecker refers to the need for description and prescription of qualitative means and ends in the field. More broadly he views the role of research to be that of dealing with interpersonal relationships found in all teaching-learning situations, i.e., "humans as component qualities - not of painting or sculpture but of situations." Hill (29) notes the need for research to identify and analyze qualitative data, especially since all art education is mediated in the qualitative-symbolic domain and that teaching-learning situations in art need to be characterized by qualitative predominance. Eisner (20:362) defines the use and control of the qualitative as "qualitative intelligence." Recognizing that the actor,

to be successful, sees his task as "achieving qualitative ends . . . and engages in those activities designed to elicit qualities that constitute these ends;" he makes the analogy between acting and teaching as evidence for developing the qualitative intelligence of teachers:

> Intelligent control of qualitative elements necessary in acting is also necessary in teaching insofar as teaching is partly a task of acting and achieving communication between teacher and individual and group. The qualitative controls that teachers employ can enhance teaching and can be instrumental to theoretical ends embodied in certain subjects and can also be used to achieve qualitative ends incorporated in other subjects. Teachers who are able to control qualities intelligently are probably better able to produce the kind of classroom atmosphere that will facilitate the type of learning they value. (20:363)

Another condition that points to the necessity for teacher awareness and control of their qualitative nonverbal behavior is noted by Galloway. (24:72) He states that when a contradiction exists between what the teacher says and what the teacher communicates, pupils will attend to the expressive behavior of the teacher to check on the verbal. "If a difference exists between the two expressions, it is the nonverbal that is believed and accepted by the pupil as representing the authentic message." It is particularly in those teaching-learning situations that are characterized by cultural difference between teacher and students that the influence of the nonverbal behavior of teachers is most apparent. According to Galloway:

> Especially important is the notion that nonverbal messages may be more significant to pupils than teacher verbalizations when they attempt to ascertain the teacher's true feelings and attitudes toward them. A prominent example of this phenomenon occurs with linguistically disadvantaged youngsters who are bombarded by the verbal avalanches of teacher talk in classroom settings, and who have no recourse but to rely on the nonverbal messages of teacher behavior. It is the culturally disadvantaged child who understands the <u>least</u> amount of information that is transmitted verbally and who reads the <u>most</u> meaning into the nonverbal behavior of the teachers. (24:72, 73)

Nonverbal behaviors reflect those qualities that provide instantaneous perception of meaning within the context of interpersonal relationships and often are the most lingering retention of the event. As such, nonverbal phenomena become qualitatively predominant aspects of interpersonal relationships. These interpersonal relationships are critical aspects of all learning situations.

Research that has been conducted to date in the area of teacher behavior has dealt primarily with the analysis of teachers' verbal statements in an effort to delineate significant aspects of teacher behavior and student-teacher interaction. In an anthology of twenty-six major classroom observation instruments, Simon and Boyer (47) report that twenty-five of these instruments deal exclusively or primarily with the analysis of teachers' verbal communication. Seven of the instruments are designed to observe some aspect of nonverbal behavior. Those items classified as nonverbal refer to such behaviors as nonverbal writing, seat work, demonstrations and illustrations. Only one instrument deals with the identification of gestural behavior as a mode of communication of an encounter. Gesture in this instrument is defined as "behavior characterized by purposive body movement." In the field of art education, Neil (42:2) has reported the utilization of verbal descriptive analysis of body motion with student teachers in art as it relates to "recall of attitude so that the teacher can determine whether he is competent, hesitant or fearful."

The increase in the number of studies dealing with techniques for systematic observation and analysis of teacher verbal behavior has provided procedures for more objectively evaluating overt teacher behavior in order, hopefully, to create more effective teaching-learning situations. Continuing investigation relative to the identification and analysis of nonverbal gestural behavior is providing knowledge of an important aspect of communication behavior. However, an insufficient number of studies related to nonverbal gestural communication and teacher behavior seem to have been conducted and/or reported. The development of techniques for the systematic observation and analysis of qualitative nonverbal gestural behavior constitutes an important dimension of interpersonal communication, particularly as it relates to art teaching-learning situations.

Theoretical Background of the Study

The theoretical constructs pertaining to this study are derived from a concern for qualitative communication behavior. One way in which the human organism communicates is by means of a verbal linguistic structure and semantic word symbols. A secondary aspect of verbal language deals with those qualities that give expressive intent to the word message. Nonverbal communication, although varying in recognized predominance in diverse cultures, is a prominent aspect of the language systems of man. Like verbal language, nonverbal language forms are structured and contain semantic and expressive meaning within the context of interpersonal relationships.

The process of education essentially is a communication process, not only in that sense of transmitting knowledge, but more particularly as it relates to interpersonal communication behaviors. The cognizance of this fact is interpreted to be the primary reason for the increase in research in the area of affective teacher communication behavior.

The literature and research that is related to this study is presented under two major sections: (1) Interdisciplinary Approaches to the Study of Nonverbal Behavior and (2) Techniques for the Systematic Observation and Analysis of Affective Teacher Behavior.

Interdisciplinary Approaches to the Study of Nonverbal Behavior

Nonverbal behavior is an integral aspect of the human communication process and can be understood in terms of its symbolic, biological and cultural determinants.

Language is a symbolic process. White (49) says that all human behavior consists of, or is dependent upon, the use of symbols and that the values and meanings of symbols are derived from and determined by those who use them. Langer's (36,37) theory of symbolic processes is important as it deals specifically with the value and meaning of symbols. In Langer's theory, a knowledge of word meanings is a knowledge of discursive symbols. These discursive symbols correlate names or concepts with things. They become verifiable and have a defined syntax and order. Nondiscursive symbols depend upon individual personal perceptions, insight or intuition for understanding. In Langer's view, art as a nonverbal process utilizes nondiscursive symbols. The artist is concerned with the expression of feelings, although at the moment of expression he may not actually be experiencing that particular feeling. What he does is create forms symbolic of human feeling. As such, these nondiscursive symbols cannot be verified, or have a defined syntax or order.

The way in which information is coded is relevant to symbol meaning. (43) Analogic and digital codification are referents for language structure. "Analogic codification constitutes a series of symbols that in their proportions and relations are similar to the thing, idea or event for which they stand. Such a form of codification deals with continuous functions, unlike digital codification, which deals with discrete step intervals." (43:8) Examples of digital codification are the phonic alphabet and the numerical system. The principles of analogic and digital codification are most important in the study of language behavior. Words, whether in speech or in writing, remain identifying or typifying symbols that lack the immediacy of analogic devices such as actions, pictures or objects that comprise nonverbal communication. Digital codification is utilized in discursive language which is dependent upon logic. Analogic codification is utilized in nondiscursive language which is dependent upon feelings.

> Logic dispenses with analogic codifications altogether, in spite of the fact that most of our thinking and communication is dependent upon the nonverbal as well as the verbal. If logic has any usefulness - and obviously it does - then a system comparable to logic would seem to be needed for coping with analogic codifications. (43:9)

It is emphasized throughout the work of Langer that nondiscursive symbolization, governed by a logic, a set of principles, although being different from that of discursive symbolization, is not any more theoretically unknowable or less open to investigation.

From his investigation of the symbolic process, Harold Rugg (44:708) has developed what he labels "the theorem of the two-fold symbolic act." The theorem states: "The human being knows, feels, thinks, expresses, communicates, by means of two types of symbolic act: (a) felt thought through the gestural symbol, (b) verbalized thought through the name symbol." (44:304) The premise that gesture and language embrace all life situations, both the nonverbal ones and the linguistic ones is basic to his theory. Rugg further states:

> They provide for both phases of the inside-outside problem of knowing, and account for the "feeling" way of inside identification, of knowing a man or an object internally in his or its own terms . . . But they also provide for scientific observation from the outside, utilizing man's best instruments of measurement and interpretation in the act of verification by logical problem solving.

Rugg concludes that "every meaningful act, imagined as well as overt, is gestural-symbolic (even if only incipiently so); it is an act of completion, the act of acceptance-acting "as if" the imagined phenomenon were real." (44:310)

Hill (29) suggests that humans in their language behavior are either theoretical-symbolically or qualitative-symbolically oriented. He defines the theoretical symbol as that symbol which presents to the mind something different from that which it is. The qualitative symbol is that which presents to the mind that which it, in itself, is.

There is evidence that nondiscursive language is different from but related to discursive language. It would seem that emotional or feeling expression can be investigated with the aim of discovering the general principles of "qualitative intelligence" accounted for by nondiscursive symbolization.

Nonverbal communication behavior, particularly that of body motion and gesture as a means of expression, has long been a legitimate concern for investigation. The language of gesture has been viewed as either symbolic or instinctive. Critchley (13:116) defined symbolic gestures as those that, although having meaning, require interpretation and are utilized as an aspect "of the language of religious symbolism, mythology or folklore." Instinctive gestures as defined by Critchley are comprehended by all, "whatever the age, race, religion, social status, or mental and cultural level." As such these gestures can easily cope with themes of an emotional nature.

Perhaps the most influential proponent of the instinctivist theory of gestural expression was Darwin. In The Expression of Emotions in Man and Animals, (14) he states that the primary expressive actions of man and lower animals are innate or inherited and are not at all governed by learning or imitation. Gestures such as shrugging the shoulders or raising the arms with open hands and fingers extended are conventional signs of impotence and wonder and are also innate, as these and other gestures are inherited. Darwin makes this assumption utilizing a criterion of universality in terms of race, age and the blind. Conversely, other gestures which we might imagine to be innate apparently have been learned. Uplifted eyes and hands in prayer, kissing or the nodding or shaking of the head in affirmation or negation are examples as these are not universal. Darwin concludes that only a few expressive movements are learned by individuals consciously and voluntarily performing them in the early years of life for some definite object or in imitation. Thus, they become habitual. The greater number and all those of importance are, in his view, innate or inherited and are not dependent upon the will of the individual. However, once acquired, these expressive movements may be consciously and voluntarily employed as a means of communication. "The tendency to such movements will be strengthened or increased by their being thus voluntarily and repeatedly performed; and the effects may be inherited." (14:355)

In more recent investigations psychologists have attempted to identify the nature of expressive movements. Allport and Vernon in their Studies in Expressive Movements (1) were concerned with the study of gesture, gait and other semantic motor acts, specifically as these adaptive acts were related to personality rather than temporary and external conditions. Adaptive acts that are common to all humans such as the eye blink or walking erect have no expressive significance in themselves but, at the same time, there are individual manners of blinking and walking. Their study gave evidence that adaptive motor acts have a consistency of pattern within individuals and are expressive of those particular individuals, but vary in their manner among individuals.

The work of M. H. Krout (33) with its focus on subconscious emotions and conflict has been significant in defining the nature of autistic gesture. Krout explains that when the individual inhibits his direct response to an external situation he responds to internal stimulation explicitly and autistic gestures occur. In situations where individuals are at variance, there can be a recognizable atmosphere where there is a sense of continual inner strife and nervous tension. Gestures in these situations tend to become autistic and are manifested in aimless fidgiting of hands and feet, rearranging articles of clothing or fiddling with a button, meaningless grimaces, clearing the throat or forced coughing. All of these gestures are incapable of correction as they are beyond the individual's control. (51:12) Krout (33) found that one of the most important characteristics of autistic gestures is that they have no semantic meaning. They are neither perceived by the actor or responded to by an observer.

In The Psychology of Gesture, (51) Wolff outlines the development of gestural behavior in the human organism. According to Wolff, there are four distinct phases of development in early life which are influential throughout the life of the organism: (1) Automatic or reflex gesture, (2) Emotional gesture, (3) Projective gesture and (4) Objective gesture. Automatic or reflex gestures are characterized by a lack of mental representation and are analogous to instinctive behavior; behavior that arouses an immediate need whose satisfaction is final. Emotional gesture is a transitional phase of development between the instinctive and objective phase and its role is to prepare for the development of thought by enlarging consciousness. The type gestures that evolve in this phase include not only the obvious ones such as rage, joy, affection or jealousy that are exhibited by the young child, but also those of imitation. According to Wolff, imitative gestures begin as early as 2 months and may continue throughout adulthood, even though the true age of imitation is between 18 and 30 months. Wolff describes two types of imitation; motor-ideo and ideo-motor. The imitativeness of the child develops from the first, which is characterized by imitating movements and gestures without comprehension of the process behind the expression. At that point when the child intuitively grasps, by imitative gesture, the inner processes on which they are based, he is capable of ideo-motor imitation. This imitation is characterized by the ability to comprehend images first and then translate them into movements. Wolff states the belief that the arts are based on ideo-motor thought and thus the child makes not only a natural actor, but also a natural artist. (51:55) Projective gestures serve as the intermediary between emotional and objective consciousness. Projective gestures are gestures of intervention: movements of appeal, acclamation or consolation and in turn, gestures of tenderness, affection and curiosity. The objective phase of gesture evolves with the capability of concrete and abstract thought. In Wolff's terms spontaneous or creative thought is governed by the imagination and the subconscious, and the descriptive gestures that accompany it are involuntary. A form of natural gesticulation evolves that is devoid of conscious or subconscious motive. This expression is based on a strong kinaesthetic imagination and a strong feeling of identity. "In all gesticulation which is not consciously or unconsciously utilitarian or persuasive, two tendencies are differentiated: one which expresses thought and the other which expresses self. These two tendencies strengthen each other and work in unison." (51:61, 62)

The development of communication functions is dependent directly on the development of the neuro-muscular system of the human organism. Further, the development of expressive nonverbal behavior lies in that capability of the organism to interact with its environment and those humans within it; as such the organism learns to express through movement and gesture and also evolves an individual manner in that expression.

Comparative anthropological studies have shown that actions and gestures are, on the whole, dependent upon explicit or implicit prior agreements. (43:22) Weston La Barre (54:194) says that "a great deal of

speculative nonsense has been indulged in by the older instinctivist theorists and much of what they uncritically attributed to innate inherited responses can now be clearly seen to be culturally-learned responses." Both Efron (17) and Birdwhistell (10) note that there is a "tradition" of speculative theory associated with the gestural behavior of ethnic groups. These investigations base their descriptions and classifications on generalizations derived from observation of isolated cases and in no way empirically validate their conclusions, either by the investigation of similar as well as different environmental conditions, the specific form of behavior chosen or by describing the data used and the obtained results. Given the range of behavioral and morphological variabilities that exist in any one ethnic group, the claims that "racial" types are endowed with particular psychological, gestural and biological characteristics must be based on emotional or political bias rather than controlled study.

The literature describing patterns or use of gestural communication behavior relative to particular ethnic groups further suggests that ethnic gestural behavior is conditioned by environmental and cultural factors rather than by exclusively biological determinants. Such stereotypes as those that credit particular ethnic groups with effecting a particular utilization of gestural behavior cannot be validated from a historical perspective. Anglo-Saxons are supposed to be rigid and impoverished in their use of gesture; and yet the Englishmen of the first half of the eighteenth century gesticulated freely while their American counterparts in frontier times were even less articulate gesturally. The Jews are thought to be highly gesticulatory and the Ashkanzi Jews of today still evidence this type of behavior; but D'israeli, a Sephardic Jew, spoke with little gesticulation and is credited (as is Lord Beaconsfield) with the introduction of the "Victorian" style. (34,17) The French are also noted for the volubility of their gestural behavior, but they were not so known until the arrival of Catherine de Medici. Historically, Italy has been a major source of European gestures, as well as those areas under ancient Greek influence particularly, but not those of the mid-northern nucleus of early Rome. The people of Sicily and those of Southern Italy, especially the Neopolitans, have been traditionally associated with a highly developed symbolic gestural communication system. (34:203, 204)

History illustrates that elocutionary gesture has long been a traditional emphasis of effective public speaking. Oratory in the "grand manner" held forth in England from the latter eighteenth to the mid-nineteenth century and has survived even later in some areas of rural America. (34:204) A Manual of Gesture (6), first published in 1872, quotes the writings of such notables as Cicero, Quintillian and Demosthenes on the importance of gesture. The manual includes detailed descriptive and illustrative notation for all body movements utilized in rhetorical speaking. In 1919, Mosher's The Essentials of Effective Gesture was published. (41:3-9) The author defines gesture as visible expression "that is any posture or movement of the head, face, body, limbs, or hands, which aids the speaker in conveying his message by

appealing to the eye." Noting that speech contains two aspects of expression, that referring to the material and the other to the mental or emotional; correspondingly there are two major classifications of gesture: the literal and the figural. Contemporary writings also assert that nonverbal gestural behaviors are an important aspect of effective speech communication. McBurney and Wrage (39:441, 443) note that bodily action is referred to as the physical code of speech and the speaker does not decide whether he will use bodily action in speech; he necessarily uses it as long as he is in sight of an audience. Accordingly his listeners and "viewers" respond to what they see and because the visible symbols of speech convey meaning in their own right, supplanting and reinforcing audible symbols, they often supercede words when there is a discrepancy between the words and actions of the speaker. Gray and Braden (26:580) state that one of the functions of gesture is to serve both the speaker and the listener by clarifying imagery. But more than this, they make more impressive the attitudes the speaker wishes to communicate. Visible action in the form of communicative gesture provides an additional sensory modality; and "it is generally recognized that the more sensory avenues utilized in entering consciousness, the more impressive the effort will be." Gray and Braden (26:567) state that the reason why television in mass communication has come so close to supplanting radio entirely is due to the fact that television emphasizes the "visible" aspects of speaking.

Relative to the examples cited, it would seem that "styles" of gestural behavior change in terms of socio-cultural influences. In the study, Gesture and Environment (17:136) which examines the gestural behavior of the assimilated Eastern Jews and Southern Italians in New York City, Efron found that assimilated ethnic groups "(a) appear to differ greatly from their respective traditional groups and (b) appear to resemble each other." More specifically his findings reveal that gestural "characteristics" found in the traditional group disappear with assimilation into the "Americanized community"; gestural traits reflect the particular socio-economic stratum to which individuals have been assimilated, regardless of whether those assimilated are foreign-born or American-born; and an individual may, if simultaneously exposed over a period of time to several gesturally different groups, adopt and combine certain gestural traits of both groups. Efron concludes that the results of his study point to the fact that gestural behavior, or its lack, is not determined by biological descent relative to particular ethnic groups.

These findings indicate that gesture and movement are a function of the communication system of which a person is a part. Ruesch and Keys (43:22) note that the organization of the communication network and the modes of communication of a nation or its particular sub-cultures are fitted to suit typical and recurring situations and in part determine the varieties of communication. "In any culture each person is prepared,

therefore, through education to assume a place in the communication network of his group." An individual's movement and gesture expresses the cumulative experiences and values of his group. Birdwhistell (9:128) states that:

> Communication is not a process made up of a total of individual expressions in some action-reaction sequence. It is a system of interaction with a structure independent of the behavior of its individual participants. One person does not "communicate" to another person; he engages in communication with him. A human being does not invent his system of communication. He may make additions to it, and he may vary the directions of its formulations. However, as a system it has been in existence for generations. He must learn it in order to be a member of his society.

Metacommunication is a concept that illustrates the relationship between the verbal and nonverbal codification. Messages may be regarded as having two aspects: the statement proper and the explanations that pertain to its interpretations. Interpersonal communication necessitates that these coincide and this is only possible by use of another channel. "Thus, when a statement is phrased verbally, instructions tend to be given nonverbally." (43:192) When people are engaged in the communication process they not only exchange messages that are referents to outside events, but also exchange messages that refer to the communication process itself. Metacommunicative messages include specific instructions given by the sender as to the way messages ought to be interpreted and the respective interpretations made by the receiver; i.e., the implicit instructions determined by a person's role, as well as those implicit and explicit instructions that are institutionalized in the structure of social situations. (43:7) Sociologist Erving Goffman (25:4) points out that when a person appears in the presence of others he usually mobilizes his activity so that it will convey an impression that is in his own interest and those present

> . . .commonly seek to acquire information about him or bring into play information about him already possessed. Information about the individual helps to define the situation, enabling others to know in advance what he will expect of them and what they may expect of him.

He further states that if those present are unfamiliar with the person, they individually acquire information which allows them to "apply their previous experience with individuals roughly similar to the one before them, or more important, to apply untested stereotypes to him." (25:1) Goffman is explicit in emphasizing that others will attend to both the verbal and nonverbal aspects of the individual's behavior. He says that verbal behavior is relatively easy for the individual to manipulate at will, but that he will have relatively little concern for or control of

his nonverbal expressive behavior. Thus, others may attend to the individual's nonverbal expressive behavior, which is considered to be ungovernable, "as a check upon the validity of what is conveyed by the governable aspect." (25:7)

Borden, et al, (11:52) notes that the "transmission phase of human communication is overt, though it may be intended or unintended, conscious or unconscious." He further suggests that nonverbal clues are as important to the communication situation as the main message that is transmitted; and that failure to realize the importance of nonverbal clues may well cause failure in the communicative act. (11:63) Eisenson and Boase (19:55) state that gesture, like oral language, has levels of significance and "may signify specific thoughts, imply attitudes or moods, or be expressive of thoughts or feelings." It is assumed, for the most part, that in the transmission phase of communication it is the verbal that contributes to the fluency of the speaker and his acceptance by an audience. However, as the literature suggests, nonverbal communicative behaviors become "messages by which others decide who and what we are." (19:55) Sapon (28:188) is quoted as reporting that in utilizing a minimum of the postures, gestures and supporting vocal "noises" associated with a foreign language and, without saying much beyond this, he has been complimented for fluency. In a study dealing with the concept of fluency in communication situations, Horowitz (30:12) concludes that "as of now it would seem justified to say that fluency may have more visual phenomenal attributes than voice or diction attributes."

"The preponderance of evidence relative to the visible expression of emotional behavior strongly suggests that such behavior is learned and conforms to cultural patterns." (18:80) Within the framework of communication theory, a study which considers symbolic movements and gestures and practical, adaptive actions with communicative value, does not aim at compiling a dictionary of gestures and other motions; instead it is concerned with communicative actions conceived as events that occur in a certain context. (43:13)

Techniques for the Systematic Observation and Analysis of Affective Teacher Behavior

Investigations that seek to develop techniques for systematic observation and analysis of teacher behavior are focused within the context of the communication process, whether or not such techniques deal primarily with verbal or nonverbal communication acts. As such, only those studies that are concerned with affective verbal or nonverbal communication acts and have applicability to interpersonal communication within the context of teaching-learning situations are included in this discussion.

"Paralinguistics has been adopted as the name for the study of phenomena of voice, apart from the linguistic code proper, and Kinesics for the study of the visual aspects of interpersonal communication, in so far as they are a body of motion." (31:12) According to Birdwhistell (10:3) the study of Kinesics is composed of three major categories:

(1) Pre-kinesics dealing with general physiological bases for the systematic study of body motion, (2) Micro-kinesics dealing with the isolation of kines (least particles of abstractible body motion) into manageable morphological classes and, (3) Social Kinesics relating to the function of motion as it relates to social performance; i.e., to the communication aspects of social interaction.

That aspect of body motion labeled gesture has some commonality in definition as it relates to interpersonal communication. Brazier (12:66) notes that while some nonverbal communication in man comes under the autonomic category as does the blush or shiver, others like the shrug or lifted eyebrow, which have different meanings in different cultures, are cortically initiated and require the receiver to have the meaning that the sender intends by the gesture. Hymes (31:12) states that gestures are those aspects of body motion that "contain vocalized rationalizations by the actor and viewer." And Birdwhistell (10:6) simply states that gestures are conventionalized motor symbols. Birdwhistell (10:10) concludes that within the framework of kinesics, motion is always part of a pattern and that there is no "meaningless" motor activity; also, until otherwise empirically demonstrated, body motion patterns should be regarded as socially learned and that meaning arises only in context.

Barlund (7:511) states that due to fascination with verbal language and the difficulties in analyzing nonverbal cues there is a smaller and less consistent body of data concerning the nonverbal aspects of communication. In confirmation of this notion, Flanders (21:2) says that his system of interaction analysis is primarily concerned with verbal behavior as it can be observed with more reliability than most nonverbal behavior. He further assumes that verbal behavior is an adequate sample of an individual's total behavior. According to much of the literature so far reviewed, this is a questionable assumption. Such investigations as have been reported in the area of nonverbal communication behaviors do offer measures of reliability and validity relative to the specific attributes under study.

In an introduction to "Nonverbal Interaction," (7) Barlund refers to several of the more significant studies concerned with postural, manual and facial expression. In a study by James, (7:520) an attempt was made to determine whether postures were expressive, what specific emotions would be associated with them and what parts of the body contributed most to them. His findings reveal that posture is seen as symptomatic of inner states, gives general clues as to attitude, and that placement of head and trunk contribute most to interpretation of meaning. The literature indicates that postural-gestural behavior expresses an individual's inner state more accurately than his words since it is less consciously controlled. Corbin (7:520) suggests that unconscious impulses which are suppressed verbally may be revealed in numerous acts that are less obvious or explicit in meaning; and that physical awkardness may be symptomatic of inner stress. Carmichael, (7:521) in experiments concerned with expressive meaning of hand gestures, positioned

an actor behind a curtain so that only his hands were visible and used them to portray a set of emotions. Subjects were shown photographs of the gestures and evidenced substantial agreement on the emotions conveyed and when motion pictures were used, a slightly higher degree of commonality was evidenced. The results suggest that isolated hand movements are capable of prompting responses similar to those elicited by the whole body.

Investigations of posed facial expressions have been, for the most part, inconsistent and inconclusive. In the early phase of these investigations, research focused on the stimulus properties of facial patterns in an attempt to relate them to the traits and emotions of man. In such studies estimates of emotional states, intelligence, occupations and nationality proved only slightly better than chance. Researchers noted consistency in the expression of individual stimulus persons; and in the responses of individual judges to posed behavior, accuracy improving as the number of cues were increased. However "shared cultural stereotypes rather than valid judgments appeared to account for agreement among raters." (7:522)

More current research has focused on the effects of context and on the attributes of the perceiver. The research of Turhan, Vinacke and Levy, (7:522) among others, indicates that the larger the number of postural, facial and environmental cues, the more consistently they are identified by judges. The view that expressive behavior allows the perceiver to identify general attitude, but that specification of precise inner feelings are dependent upon situational factors, is supported by the research of Frijda and Phillipszoon. Situational indicators confirm that "setting and social cues combine to permit accurate interpretation of non-verbal expressions." (7:523) Investigations by Cline (7:523) revealed that the context of other persons as well as environmental settings determine the significance of facial cues. Since the perceiver forms his impression of others according to his own attributes, i.e., the similarity of perceiver to perceived with respect to role, attitudes and insights, Secord (7:524) posits that this inferential process is contributable to the following principles:

1. "temporal extension" (momentary attitudes are converted into enduring traits)
2. "Parataxic distortion" (object persons are related to "significant others," particularly parents)
3. "Categorization" (persons are classed according to criteria relevant to the perceiver)
4. "Functional inference" (physical features such as high forhead are seen as indicative of intelligence)
5. "Metaphorical generalization" (by analogy, rough clothing signifies rough behavior)

Barlund (7) notes that evidence suggesting that stimulus posed expressions evoke stereotyped responses in the viewer is important as perceptive and provisional judgments may increase the likelihood of interpersonal rapport, and rigid or stereotyped judgments are likely to decrease it; thus, these perceptions necessarily alter the way communication will be initiated, conducted and concluded.

In a summary of findings of various studies dealing with the emotional meaning of nonverbal communicative acts, Davitz (15:177) reports:

> . . . the accuracy with which emotional meanings were communicated far exceeded chance expectation. Individuals indeed differ in their ability to communicate, but notwithstanding these individual differences, our results demonstrate incontrovertibly that nonverbal, emotional communication is a stable, measurable phenomenon.

A study designed by Levitt (38:100) to measure the relationship between abilities to identify vocal and facial expression examined the comparative communicative efficiency of vocal expression, facial expression and combined vocal-facial expression. The findings revealed a significant correlation between vocal and facial expressive abilities; facial expression alone was significantly more effective than either vocal-facial or vocal expression alone in communicating emotional meaning; and vocal-facial expression was more effective than vocal alone. Levitt suggests that a general factor underlies different behavior involved in expressive communication, which may be either symbolic, physiological or attitudinal in nature. However, the data revealed that only a small part of the variance in emotional communication could be accounted for by a general factor, indicating that there are specific factors involved in the specific modes of communication.

By utilizing three modes of communication behavior, Beldoch (8) attempted to measure persons' abilities to identify emotional meanings. A tape recorded recitation of content-standard speech representing 10 emotions was used as the vocal instrument; original abstract representations of the 10 emotions were used as the graphic art instrument; and original recorded selections representing the 10 emotions were used as the music instrument. The results showed that "significant intercorrelations were obtained among abilities to identify the expression of feeling in all three media." (8:42) Background training or interest in the arts by the subjects were not factors in their success with the instruments, although those subjects describing themselves as more sensitive to others' emotions scored higher than those who did not. Scores obtained from a vocabulary test used as a measure of intelligence also correlated significantly with all three modes of communication. "This research suggests that abilities in the discursive and nondiscursive modes have some common variance, but that they are in many ways independent of each other." (8:42)

A study to determine the relationships among body motion expression, graphic art expression and personality by Harvey (27:172) suggests that by using temperament measures as a frame of reference, body expression and graphic expression do relate in various situations involving art activity. More specifically, the study revealed that temperament influences a person's art work and behavior relative to that art work; in the production of art or the performance situation, it influences body movement and gesture; in viewing one's own art work or that of others, it influences voice and facial characteristics. (27:181) The findings imply that:

> . . .Student-teacher relations in art are characterized by temperament and bodily expressive confrontations. The notion that art cannot be taught may be true only as it concerns verbal processes and not as it concerns these variables. (27:183)

The most influential studies for the development of category systems for observation and analysis of teacher-student interaction in the classroom have been those of H. H. Anderson. (2, 3, 4, 5) Under the assumption that the teacher is the most influential agent in determining the affective climate of the classroom, Anderson classified teachers verbal statements into two categories: Integrative and Dominative. His studies have revealed that integrative teacher behavior tends to evoke integrative pupil behavior and that dominative teacher behavior evokes dominative pupil behavior. Withall (50) uses much the same rationale as Anderson in focusing exclusively on the teacher's verbal statements as measures for determining the social-emotional climate in the classroom, rather than also applying them to student behavior, as did Anderson. In classifying teacher's verbal statements into seven categories ranging from acceptance to disapproval, Withall measures the affective intent of teacher behavior as being either "learner centered" or "teacher centered." Flanders (21) uses seven categories of teacher verbal statements which are related to those of Withall, two categories for student verbal response, and one category of silence or confusion in his instrument. The seven categories of teacher verbal behavior measure the affective intent of the teacher as being of "indirect" or "direct" influence in the classroom. By pairing coded observations on the ten categories and assigning them to a matrix, Flanders' system provides a simplified pattern of behaviors characterizing teacher-student interaction.

Several studies dealing with the systematic observation of teacher nonverbal behavior have been reported to date. Galloway (24) constructed seven categories for observation of teachers' nonverbal communication behavior. On the basis of teachers' facial expressions, actions and vocal language, observers make inference to the appropriate category. Three categories, "enthusiastic support," "helpful" and "receptivity" are considered to be encouraging to communication; three categories, "inattentive," "unresponsive" and "disapproval" are considered to be inhibiting to communication. A neutral "pro-forma" category is used for

those nonverbal behaviors that neither encourage nor inhibit communication. More recently, Galloway (23:10) has constructed a model of nonverbal activity representing six dimensions of communicative acts on a continuum that ranges from encouraging to restricting:

TEACHER COMMUNICATION

Encouraging	-	Incongruity
Responsive	-	Unresponsive
Positive	-	Negative Affectivity
Attentive	-	Inattentive
Facilitating	-	Unreceptive
Supportive	-	Disapproving

Sue S. Lail (35) reports the use of systematic observation of nonverbal as well as verbal behavior as an evaluative tool in two teacher preparation programs preparing elementary teachers who will be working with disadvantaged children. Lail utilizes Flanders' System of Interaction Analysis and Galloway's Analysis of Nonverbal Communication in combination to provide information on what is said and how it is said.

> With the exception of Flanders' first category which doesn't need extension or qualification, there is one nonverbal category for use when the nonverbal encourages interaction and one nonverbal category for use when the nonverbal restricts interaction. This system does not attempt to cover all kinds of nonverbal communication given by the teacher . . . (35:176)

Observers score the instrument the same as if they were using the Flanders system alone if the teacher's nonverbal behavior is encouraging; if nonverbal behavior is restricting, a one is added to the front of the number given to the verbal category. A summary of categories for Interaction Analysis and Nonverbal categories is given on the following page. (35:177)

According to Lail, the utilization of the combined verbal and nonverbal system of observation and analysis has led to significant change with student teachers in the areas of praise and acceptance of pupils, developing greater flexibility in questioning and responding to pupils' ideas, and in becoming sensitive to the pupils' attentions and interests. "Results both in analysis and discussion . . . indicate that growth toward more effective teaching behavior is being made." (35:180)

In training student teachers, Neil (42) discusses the importance of action analysis as part of the total factor in teacher learning. For the teacher to become fully embodied in teaching and the pupil to become fully embodied in learning they both need to "be aware of the extent to which both can inspire, and be inspired, through body mobilization." Neil further states that "self-reflective understanding is gained through body involvement in communication activities." (42:1) By the use of

	Verbal (Flanders)	Nonverbal (Galloway)	
		Encouraging	Restricting
INDIRECT INFLUENCE	1. ACCEPTS FEELINGS	1.	1.
	2. PRAISES OR ENCOURAGES	2. CONGRUENT	11. INCONGRUENT
	3. ACCEPTS OR USES IDEAS OF STUDENT	3. IMPLEMENT	13. PERFUNCTORY
	4. ASKS QUESTIONS	4. PERSONAL	14. IMPERSONAL
DIRECT INFLUENCE	5. LECTURES	5. RESPONSIVE	15. UNRESPONSIVE
	6. GIVES DIRECTION	6. INVOLVE	16. DISMISS
	7. CRITICISMS JUSTIFIES AUTHORITY	7. FIRM	17. HARSH
STUDENT TALK	8. STUDENT TALK RESPONSE	8. & 9. RECEPTIVE	18. & 19. IN - ATTENTIVE
	9. STUDENT TALK INITIATION		
	10. SILENCE OR CONFUSION	10. COMFORT	20. DISTRESS

body action analysis relative to recall of attitude, the teacher determines if he is "competent," "hesitant," or "fearful." On the basis of this type of attitude analysis, Neil suggests that body action behavior can be categorized as being either (1) Disassociated, (2) Integrated, or (3) Alternating. Disassociated behavior is characterized by such sustained body movements as low eye contact, perfunctory use of the mouth in speaking, small and nervous hand movements, and restrictive or repetitive body gestures. Integrated behavior reflects simultaneous use of body parts in association with speech as well as utilization of various body movements to provide symbolic meaning for what is being said. Emphatic use of single body movements, which may not always be coordinated with or dependent upon speech, characterize alternating behavior and are used to give ideas being presented symbolic dramatic impact. (42:3) By being introspectively self-conscious through recall

of body action analysis the student teacher is able to internalize both the teacher's and the pupil's body mobilization to better understand its importance as a learning factor. (42:34)

It has been noted that investigations concerning affective teacher behavior need to be considered within the framework of communication theory. A review of the literature has shown that:

> ". . . the implications of paralinguistics and kinesics for . . . teaching . . . are enormous. The speaker is free to choose his message. He is not free to choose the code of his message - this is strictly imposed by the language . . . The speaker is, however, free to color his message in certain ways, and these ways are predominantly paralinguistic and kinesic." (28:145)

Further, the literature has shown that studies conducted in the area of affective teacher communication behavior have been largely based on systematic observation and analysis. According to Simon and Boyer, (47:18) observation systems provide a means for describing the role of the teacher in reality.

> Descriptive research using observation systems indicate that the role of the teacher appears to be exceedingly consistent across grade levels, subject areas and geographic locations.
>
> The use of observation instruments provides the educational theorist a way to discern the actual teaching patterns in existing classrooms and then to reformulate models of effective teaching either by 1) learning which teacher behaviors correlate most highly with pupil growth or 2) determining which behaviors teachers are using minimally (or not at all) which theoretically could contribute to pupil growth.

CHAPTER II

PROCEDURES OF THE STUDY

Introduction

This chapter states the proposition and assumptions basic to the study and presents a description of the various methods employed in the collection of data: selection of population and sampling procedures, the development of a typology of nonverbal gestural behavior and terms descriptive of qualities, the development of an instrument for systematic observation of nonverbal gestural behavior and the criteria used for the selection and training of judges.

The proposition and assumptions basic to the study are derived from the theoretical constructs which have been set forth in Chapter I.

The assumptions underlying this study are:

1. that nonverbal gestural behavior is a prominent aspect of student teacher communication behavior within the context of art teaching-learning situations,
2. that nonverbal gestural behavior as evidenced by student teachers evokes particular qualities within contexts of art teaching-learning situations,
3. that nonverbal gestural behavior and reflected qualities as evidenced by student teachers may be characterized as being supportive, neutral or unsupportive within contexts of art teaching-learning situations,
4. that particular nonverbal gestural behaviors used by student teachers are related to particular contexts within art teaching-learning situations.

The proposition of this study is that a valid and reliable index of nonverbal gestural communication behaviors in art teaching-learning situations can be obtained by means of the categorization of both gestural behavior and qualities reflected by gestural behavior.

This study represents an attempt to develop a typology of gestural behavior and terms descriptive of qualities, and to ascertain whether student teacher nonverbal communication behavior can be measured and described by means of the categorization of both nonverbal gestural behaviors and reflected qualities observed in video recordings of student teachers in art teaching-learning situations.

Selection of Population and Sampling Procedures

The sample consists of 15 thirty-minute video recordings of student teachers in art teaching-learning situations with children and youth.

The sample was randomly selected from a population of 40 student teachers enrolled in the course, Art Education 489, Art Experiences with Children, at The Pennsylvania State University, Winter and Spring Terms, 1969.

Art Experiences with Children is a required preparatory methods course in the undergraduate curriculum of the Department of Art Education. It is elected prior to the student teaching experience in the public schools.

The student teachers comprising the population sample are characterized by similarity in education and training, as well as a diversity of geographic, ethnic and social backgrounds to be expected of students attending a large state university.

Development of a Typology of Nonverbal Gestural Behavior

Nonverbal gestural behavior has been defined as that aspect of body motion behavior that communicates meaning within contextual situations. In order to formulate a typology of nonverbal gestural behavior of student teachers in art teaching-learning situations, several procedures were used. A summary of the basic conceptions concerning body motion behavior, as outlined by Birdwhistell, (10:10) were utilized as a theoretical frame of reference. Simply stated, these basic conceptions are: (1) no motion is a thing in itself, but is always part of a pattern, (2) no motion is "meaningless," (3) no unit of motion carries meaning per se, as meaning arises in context, and (4) body motion patterns are socially learned. Thus, it was assumed that body motion of student teachers in art teaching-learning situations could be observed to isolate and describe the following:

1. the patterns of body motion used,
2. those aspects of body motion patterns that are common to all student teachers observed,
3. the qualities that patterned body motion evokes within contexts of art teaching-learning situations.

Teaching-learning situations in an art studio class with children most often comprise three differing contextual situations within any given class period. In this study, the following contextual situations served as referents for student teachers' nonverbal gestural behavior: (1) in process Task-Setting, (2) in process Demonstrating and (3) in process Evaluating. In process Task-Setting is characterized by the introduction of or structuring a topic, ideas, problems, or solutions for an individual pupil, a group of pupils, or the total class. In process Demonstrating is characterized by student teacher use of examples of a topic; presentation of ideas, problems or solutions by means of illustrative visual materials such as actual art objects or reproductions of art objects; or by showing technical processes by manipulating materials, tools or equipment for an individual pupil, a group of pupils, or the total class.

In process Evaluating is characterized by student teacher use of judgments or eliciting of judgments concerning a topic, ideas, problems, or solutions from an individual pupil, a group of pupils or the total class.

In a pilot study (48) conducted Fall Term, 1968, 8 student teachers were randomly selected for video recorded observation from a population sample of 24 student teachers enrolled in the course Art Experiences with Children, The Pennsylvania State University. Each of the 8 video recordings contained samples of nonverbal gestural behavior of student teachers within the contextual situations of in process Task-Setting, in process Demonstrating, and in process Evaluating.

The 8 video recordings were first viewed in an attempt to isolate and describe patterns of body motion employed by the student teachers. Written descriptions of "signs", that is, individual and/or simultaneous movement of body parts that characterized patterns of body motion were made. Detailed analyses of signs was facilitated by the "stop-action" capability of the video recorder. Analysis suggested several categories of signs and/or related signs characteristic of various patterns of body motions or gestural behaviors used by the student teachers. These were: (1) Facial Movement, (2) Head Movement, (3) Body Movement, (4) Arm-Hand-Finger Movement, and (5) Characteristic Arm-Hand-Finger Movement. The category, Facial Movement, included such signs as raised eyebrows, grins, smiles and frowns. Head Movements included nods, inclined, affirmative or negative motions. Postural positions such as standing, sitting, leaning and slouching, as well as motions of weight shifting, pacing or circulating were classified as Body Movement. Arm-Hand-Finger Movement included such positional motions as up or down, across the body, in front of the body and hand, palm and finger positions. Pointing, pointing with sweeps or loops, touching, and manipulating or holding objects were classified as Characteristic Arm-Hand-Finger Movement. In addition, focus or directional characteristics of patterns of body motion within contexts of art teaching-learning situations were classified as being directed toward an individual pupil, a group of pupils, the total class, an exhibit or chalk board, or an object (art object, materials, tools, etc.).

The 8 video recordings were next viewed in an attempt to discern the qualitative components of student teachers' nonverbal gestural behaviors. Terms descriptive of qualities that have been commonly applied to patterns of nonverbal gestural behaviors, as outlined by Allport and Vernon, (1:24-34) were used as referents. Analysis of the 8 video recordings seemed to support the assumption that specific patterns of body motion do evoke particular qualities, and that the cumulative effect of various body motion patterns do evoke a total qualitative impression in an observer. In descriptive terms, such qualities as acceptance, encouragement, clarification, disapproval, hesitancy and insecurity seemed to be reflected by particular gestural behaviors and in the cumulative effect of the total gestural behavior of the student teachers.

Data from the pilot study yielded evidence supporting the proposition that a typology of nonverbal gestural behavior and qualities reflected by that behavior could be constructed from observation and analysis of video recordings of student teachers in art teaching-learning situations.

For the principal investigation, 20 student teachers were video recorded in similar art teaching-learning situations during the period from February through June, 1969. However, reduction of the sample to 15 was made due to technical difficulties with 5 of the video recordings. The selection of student teachers for the video recorded sample was based on a random ordering of the Saturday art classes for children and youth conducted Winter and Spring Terms, 1969. The class periods were 120-minutes in length. Random sampling procedures were utilized in determining the six 5-minute segments to be recorded for each teacher. As video tape length allowed for approximately a 30-minute sample, this procedure insured a sampling of nonverbal behavior of each teacher across the total 120-minute class period. In the video recorded sample, student teacher's non-verbal gestural behavior is represented in each of 3 contextual situations comprising the studio art class: (1) In process Task-setting, (2) In process Demonstration, (3) In process Evaluation.

Certain measures were taken to insure some degree of neutrality in both the video recording procedure and the analyses of the video recorded observations. First, the video recorder, audio recorder and written observations had all been utilized previously in the course Art Education 489, Art Experiences with Children. Thus, the presence of a video recorder was accepted by both the student teachers and the pupils in art teaching-learning situations as customary. Second, to reduce or inhibit the incidence of the Hawthorne effect, qualitative behavior, and more specifically qualitative nonverbal behavior, was not used as a term or as a factor in the "instruction" or "evaluation" of teaching behavior with the student teachers. Third, to reduce or inhibit the incidence of the halo effect, the researcher did not witness the actual art teaching-learning situations recorded for observation and analysis.

Analyses of the 15 video recorded observations, utilizing the methods employed in the pilot study, (48) seemed to substantiate the typology of qualitative gestural behavior of student teachers which had been formulated as a result of that study. An attempt was made to verify the typology of student teacher nonverbal behavior by construction of an observation instrument that could be used by naive observers. On the basis of the data collected from the sample in the pilot program, as well as that from the sample in the principal study, an instrument was so designed. The categories that comprise the instrument and the number of items assigned to each category included: A. Facial Movement; 16 items, B. Head Movement; 5 items. C. Body Movement; 33 items. D. Arm-Hand-Finger Movement; 30 items. DD. Characteristic Arm-Hand-Finger Movement; 18 items. E. Reflected Teacher Qualities; 17 items. Thus, a total of

102 signs of patterned body motion and directional focus were contained in the 5 categories of nonverbal gestural behavior, and 17 terms descriptive of qualities were contained in the category of reflected teacher qualities. The instrument is presented in Appendix A, page 95.

The instrument to verify the typology of student teachers' nonverbal gestural behavior was designed so that observations would be made in relation to the three contextual situations, that is, in process task-setting in process demonstrating and in process evaluating, that characterize art teaching-learning situations. The instrument was further structured so that each sign of patterned body motion or directional focus was checked only once as it occurred in each behavioral category, no matter how often that particular sign may have appeared to an observer. (40:302) Observers were to analyze a 5-minute video recorded sample of student teacher nonverbal behavior derived from the 3 contextual situations of an art class. After each 5-minute episode, observers were to check those qualities they perceived as reflective of the student teacher's nonverbal behaviors previously checked.

Observers selected for the verification of the typology were all doctoral candidates in The Department of Art Education, The Pennsylvania State University, and all were experienced in the supervision of student teachers in art. Sufficient training was provided for the observers by utilizing video recorded segments of student teachers in art teaching-learning situations. Five-minute video recorded segments relating to the differing contextual situations were presented to the observers without the audio portion of the recordings. Segments were presented using the "stop-action" feature of the video recorder to clarify the categories and signs contained in the instrument. Additional samples were provided to facilitate the observers' use of the instrument and to achieve a level of training whereby the observers were capable of accurately scoring signs of patterned body motion and directional focus, as well as qualities reflected by student teachers' nonverbal gestural behavior.

Three observers utilized the instrument with a video recorded sample of 4 student teachers randomly selected from those video recorded in the Fall Term, 1968, and Winter Term, 1969. The observers viewed each of the 4 video recordings without the audio portion of the recording so that student teacher's nonverbal gestural behavior was the predominant modality presented in each of the three contextual situations. Also, this method assured that, to a greater degree, only the signs of patterned body movement and directional focus would be the dominant factor in evoking qualitative meanings. A total of 1,567 observations were recorded by the 3 observers. Coefficient of observer agreement, as measured by the contingency coefficient was 81 percent. Further analysis of the data, utilizing item by item analysis of the signs of patterned body motion and directional focus within contexts of art teaching-learning situations, supported, to a degree, the modification of the categories of nonverbal behavior. The findings, as revealed in the literature, also suggested

some reorganization of categories of nonverbal behavior in terms of the particular types of expressive meanings reflected by particular patterns of body motion.

It has been noted that head and body postural positions are symptomatic of inner states and reflect an individual's attitude. (7:520) Facial expressions serve as interactive stimuli when viewed in the context of interpersonal or social situations. (7:523) Gestures involving patterned motions of arms, hands, and fingers may reflect various meanings relative to situational factors. They may be reflective of inner tension becoming autistic in character; (33) they may be an unconscious accompaniment of speech reflective of an individual's thinking; (51:61) or they may be purposive or pursuasive, reflecting symbolic and emotional meaning. (42:3; 7:521) Body motion behaviors are reflective of attitude and "territory" when viewed in the context of interpersonal relations. (22,24)

Analysis of all the data supported the formulation of a typology of nonverbal behavior of student teachers that would be related to transactional and non-transactional patterns of body motion and directional focus within contexts of teaching-learning situations. In this study, transactional gestural behaviors are those that may be either consciously or unconsciously used by the student teacher and are reflective of the student teacher's direct influence on others; non-transactional gestural behaviors are those that are not consciously controlled by the student teacher and are reflective of the student teacher's inner state and attitude towards others. Student teacher gestural behaviors that serve as interactive and spatial referents to others within contexts of art teaching-learning situations are classified as transactional behavior. Student teacher gestural behaviors that serve as image reflecting referents of the student teacher to others within contexts of art teaching-learning situations are classified as non-transactional.

The typology of nonverbal behavior of student teachers relative to contexts within art teaching-learning situations is as follows:

Transactional Nonverbal Behavior

(Interactive and Spatial Referents)

Eye Contact
Facial Motion
Body Motion
Arm-Hand-Finger Motion
Directed Arm-Hand-Finger Motion

Non-Transactional Nonverbal Behavior

(Image Reflecting Referents)

Head Motion
Body Posture
Directed Arm-Hand-Finger Motion

The category Eye Contact contains such signs of patterned body motion and directional focus as avoiding, downcast, or directed to individuals or objects. Signs such as grins, smiles, frowns, or grimaces are included in the category Facial Motion. The category Head Motion is characterized by affirmative or negative motions and inclined, up-turned, or down-turned positions. Body Posture includes such positional signs as standing, sitting, leaning, and also such postural characteristics as arms folded, hands on hips, or hands clasped. Body Motion signs are such movements as shifting weight, shrugging shoulders, pacing, and proximity of location in relation to individuals or objects and environmental setting. The category, Arm-Hand-Finger Motion, contains signs that are primarily positional and descriptive, that is, in front of the body, across the body, away from or toward the body and sweeps or loops. The Directed Arm-Hand-Finger Motion category contains primarily the same patterned motions and directional focus as that of Arm-Hand-Finger Motion, but they are distinctive in that they are characterized by pointing to self, others, or objects. Manipulating, grasping, and holding behaviors are also included in the Directed Arm-Hand-Finger category. The patterned motions and directional focus of these behaviors may be either transactional or non-transactional, and are, therefore, placed in both categories in the typology.

Analysis of the category Reflected Teacher Qualities, comprising 17 terms descriptive of qualities related to student teacher gestural behavior, revealed that the observers perceived 83 percent of those qualities reflected by all student teachers as being supportive, 12 percent as unsupportive and 5 percent as neutral. The data also revealed that individual student teacher's nonverbal behavior reflected different qualities within contextual situations. Nonverbal behavior of one student teacher reflected those qualities that were considered to be supportive only in the context of in process task-setting by one of the observers. In contrast, all three observers perceived this same student teacher's nonverbal behavior as being unsupportive in the context of in process demonstrating; and two of the three observers viewed her behavior as being supportive in the context of in process evaluating. Over all three contextual situations the observers perceived that 61 percent of this student teacher's nonverbal gestural behavior was supportive, 28 percent was unsupportive and 11 percent was neutral. In the view of the observers, two of the four student teachers exhibited all eight qualities considered to be supportive, one student teacher exhibited all but one of these qualities and another, five of the eight qualities. Of those qualities that were considered to be unsupportive, the observers viewed three of the four student teachers to be "commanding" in their nonverbal behavior, one of the four to be "boring," and two of the four student teachers were perceived as being "disapproving." The observers did not, however, perceive any "hesitant," "fearful," or "threatening" nonverbal gestural behaviors.

A review of the data concerning qualities of nonverbal behavior suggested categorization of terms descriptive of qualities, wherein particular qualities could be classified on a continuum ranging from supportive to unsupportive within the contexts of art teaching-learning situations. Previous investigations by Galloway (23, 24) and Lail (35) have shown that the placing of qualitative aspects of nonverbal behavior on a continuum is both a feasible and reliable procedure for measuring the qualitative effects of nonverbal behavior.

The categorization of terms descriptive of qualities of nonverbal behavior as reflected by student teachers within contexts of art teaching-learning situations formulated for this investigation includes:

1. Enthusiastic

   Nonverbal behaviors that evoke qualities of unusual enthusiasm, warmth, encouragement, or emotional support for students or topic.

2. Receptive-Helpful

   Nonverbal behaviors that evoke qualities of attentiveness, patience, willingness to listen, acceptance or approval; a responsiveness to students or situations implying receptiveness of expressed feelings, needs or problems.

3. Clarifying-Directive

   Nonverbal behaviors that evoke qualities of clarification, elaboration, direction or guidance.

4. Neutral

   Nonverbal behaviors that evoke qualities of little or no supportive or unsupportive significance within contextual situations; routine acts.

5. Avoidance-Insecurity

   Nonverbal behaviors that evoke qualities of avoidance, insecurity, insensitivity, impatience, ignorance, or disruption to students, topic or situations.

6. Inattentive

   Nonverbal behaviors that evoke qualities of inattentiveness, pre-occupation, apparent disinterest; an unwillingness or inability to engage students, topic or situations.

7. Disapproval

   Nonverbal behaviors that evoke qualities of disapproval, dissatisfaction, disparagement or negative overtones to students, topic or situations.

Development of an Instrument for Systematic Observation of Nonverbal Gestural Behavior

The development of an instrument for systematic observation of qualities of nonverbal behavior of student teachers' was based on the need for a method to systematically analyze the qualitative components of student teacher nonverbal behavior within contexts of art teaching-learning situations.

There are basically two principal methods employed in the construction of instruments for observation of classroom behavior. One approach is to limit the observation to one aspect of behavior, determining a convenient unit of behavior and the constructing of a "finite set of categories into which one and only one of every unit observed can be classified." (40:298) The second approach to the construction of observational schedules is that of listing a number of specific items of behavior "which may or may not occur during a period of observation." (40:298) This method was used in constructing the instrument to verify the typology of nonverbal behavior and reflected qualities as described earlier in this chapter. The first approach, known as the category system, has been utilized most successfully when there is one dimension of behavior to be measured such as climate, as in the Withall and Flanders systems. According to Medley and Mitzel, (40:299) observers are likely to feel more comfortable with a category system rather than a sign system, as the number of aspects of behavior to be considered in the category system is small. The observer is able to record each behavior as it occurs, forget it, and be ready for the next behavior. In a sign system, the observer needs to be alert to a much wider range of behaviors and will record fewer observations than one who is categorizing.

The formulation of a typology of student teacher nonverbal behavior and reflected qualities was accomplished by the construction of two sets of categories representing (1) student teachers' gestural behavior and (2) qualities reflected by those behaviors as they occurred within contexts of art teaching-learning situations. The nature of the behaviors under investigation seemed to support construction of a category system for systematic observation. Nonverbal gestural behaviors consist of patterned body motions that, for the most part, occur simultaneously and are perceived as a single unit of behavior or as a series of units in time comprising episodes of behavior. However, it has been shown that particular patterns of body motion seem to be expressive of particular meanings and thus, can be incongruent in their overall qualitative effect. It is not difficult to imagine a situation in which differing aspects of a student teacher's nonverbal behavior may have differential qualitative effects when viewed either as a single unit of behavior or as an episode of behavior. Patterned facial motions may express acceptance, while eye contact may be avoiding, and arm-hand-finger motion and body posture may be expressive of inattention or disinterest. Conversely, it is also evident that the particular patterns of body motions can all be expressive of the same meaning and thus, congruent in their overall qualitative

effect. For these reasons it seemed desirable in designing an instrument to measure the relationship between nonverbal gestural behavior and reflected qualities, that both these aspects of student teacher behavior be observed and judged simultaneously as they occurred within contexts of art teaching-learning situations.

In formulating an observational instrument utilizing the category system, the recommendations of Medley and Mitzel (40:300-301) were employed as referents. They advise that the number of categories used should not be too large and that their frequency of use should be approximately equal with some behavior or aspect of behavior that is relatively common. However, it has been shown that categories used less than five percent of the time can function effectively. In addition, they suggest that scoring should be based on natural units of time if convenient to the behaviors studied; if not, judgments should be based on brief time units. They further recommend that the behavioral cues on which discriminations are made be explicit and facilitate ease in judging by observers.

The seven categories of nonverbal gestural behavior, that is, Eye Contact, Facial Motion, Head Motion, Body Posture, Body Motion, Arm-Hand-Finger Motion and Directed Arm-Hand-Finger Motion seemed to satisfy the requirements concerning number of categories and frequency of use. In addition, each category comprises distinct aspects of behavior; that is, signs of patterned body motion and directional focus that are applicable only to that particular category. Thus, discriminations between categories would seem to be independent enough so that the halo effect, wherein judgments in one category tend to influence judgments in another, would be reduced. However, the purpose of the instrument in this study was not only the measurement of what aspects of nonverbal behavior were characteristic of student teacher behavior, but also measurement of the relationship of these aspects of nonverbal behaviors and reflected qualities in art teaching-learning situations. Observers would be expected to make simultaneous discriminations between qualities in terms of behaviors as they occurred. The reliability of Withall's categories in which the observer must code every verbal statement the teacher makes and simultaneously infer the intent of the statement suggests that these discriminations can be made dependent upon the sophistication and training of the observer.

The category system for the instrument to measure the relationship between student teacher nonverbal gestural behavior and reflected qualities was conceived on the basis of simultaneous usage of both gestural behavior categories and categories descriptive of qualities. As the categories descriptive of qualities are seen as a continuum on which qualitative effect is coded from supportive to unsupportive within contexts of art teaching-learning situations, it seems appropriate that each category of gestural behavior be judged relative to a particular category descriptive of qualities on the continuum. Enthusiastic behavior is considered to be more supportive than Receptive-Helpful behavior and that behavior, in turn, is more supportive than Clarifying-Directive behavior. Neutral behavior is more supportive than behavior reflecting Avoidance and

Insecurity, and that behavior is more supportive than Inattentive behavior. Behavior reflecting Disapproval is considered to be the least supportive in art teaching-learning situations. Thus, for each gestural category, such as Facial Motion, observers were expected to discriminate between the seven qualitative categories and score the appropriate quality based on their perception of that gestural behavior as it occurred in the context of the art teaching-learning situation.

Several methods were employed in constructing an observational schedule that would facilitate recording the frequency of occurrence of gestural behaviors and reflected qualities simultaneously. The first approach used natural time units relative to the occurrence of gestural behavior. This proved to be an arduous task considering the nature of the phenomena under investigation. Gestural behaviors, unlike verbal statements, function as a continua in time or represent changes over time. (43:8) Even though particular patterns of body motion were assigned to gestural categories, the categories themselves did not seem to fall into a natural time unit of reference. The possibility that a number of observers, each concentrating on only one category of gestural behavior to provide a solution, also proved unfeasible. Since neither of these approaches seemed appropriate for the nature of the phenomena under investigation, a category plus time unit means of recording observations was initiated. This method proved to be the most feasible as far as facilitating the observer's ability to record frequency and reflected quality of gestural behavior simultaneously.

An observational schedule was constructed wherein categories of gestural behavior were organized sequentially beginning with the category Eye Contact and ending with the category Directed Arm-Hand-Finger Motion. Space was provided under each gestural category whereby observers were to record a numeral associated with a particular category descriptive of a quality. The numeral 1 was recorded if the behavior was perceived to be Enthusiastic, the numeral 2 for Receptive-Helpful behavior, and so on through the numeral 7 for those behaviors reflecting Disapproval. In utilizing the instrument, the researcher and an assistant soon developed a natural and comfortable rate in recording frequencies and qualities of gestural behavior. During first use of the instrument, the rate of recording judgments was approximately every 10 to 12 seconds. Revision of the instrument, by placing the numerals associated with qualities under each category, as well as increased usage, reduced that rate to the point where judgments were made at approximately three second intervals.

After a natural rate of recording judgments was attained by the observers, analysis of the data obtained through the use of the instrument gave evidence of reliability in measuring the cumulative reflective qualities of a student teacher's nonverbal behavior both within contexts of in process task-setting, demonstrating, and evaluating, and the over all context of the art teaching-learning situation. However, a weakness in the usage of the instrument became apparent. Since the total number of observations for each observer differed, even if only slightly, item

analysis within categories revealed a lower percentage of agreement between observers even though the proportion of agreement was in the same direction. This seemed to indicate that while both observers were recording judgments at approximately the same rate, they were not always making discriminations about the same behaviors. A system was devised so that at every three second interval, judgments would be made simultaneously by observers at the sound of a tone. Analysis of the data obtained subsequent to the employment of this method showed increased objectivity relative to percentage of observer agreement within categories.

During this phase in the construction of the instrument, an attempt was also made to determine if the reliability of the instrument to measure the relation between nonverbal behavior and reflected qualities could be increased by having observers simultaneously observe separate behavioral categories. Analysis revealed that although the frequency of judgments increased in each behavior category, the cumulative qualitative effect as reflected by those behaviors was the same as that revealed by discriminations made across several categories.

The instrument, as it was then formulated, was used by the researcher and an assistant with four video recordings of student teachers randomly selected from the sample of eight student teachers video recorded for the pilot study (48) Fall Term, 1968. In testing the reliability of the instrument, the audio portions of the recordings were not used so that nonverbal gestural behaviors became the dominant modality viewed. Total observations made by both observers numbered 2,896. Coefficient of observer agreement as measured by the contingency coefficient, was 85 percent. As a result of the observations conducted with this sample, it was determined that an additional category was necessary to facilitate use of the instrument. It had been found that when the instrument was used with video recorded observations, there were specific instances when student teacher gestural behavior was not perceivable. This was due to the particular behavior being blocked from view by pupils passing in front of the camera, or the student teacher being in a location or position that inhibited the view of particular aspects of gestural behavior. Previously, it had been the practice not to make a judgment under those particular gestural categories where student teacher behavior was not perceivable. However, it was found that it would facilitate the rhythm of recording judgments if a tally were required; especially in those instances where there might be a series of behavioral episodes blocked from the observer's view. The category added was designated as No Evidence, and the numeral 0 was used in recording its occurrence.

The evidence suggested that a suitable instrument for the systematic observation of qualities of student teacher gestural behavior within contexts of art teaching-learning situations had been constructed.

A category plus time unit means of recording observations was devised corresponding to the seven gestural behavior categories. Discriminations as to the reflected qualities under each gestural category were made at

three second intervals. The recorded observations made for the seven gestural categories, in sequence from Eye Contact through Directed Arm-Hand-Finger Motion, was considered to constitute an Episode of Gestural Behavior. Each video recorded sample of a student teachers' nonverbal behavior was for a 30-minute time period. The number of observations (n = 600) for Episodes of Gestural Behavior (N = 86) recorded by each judge for each student teacher was held constant, thus assuring a more reliable basis for descriptive analyses of nonverbal behavior and its qualitative components.

To determine the reliability and validity of the instrument in measuring the relation between student teacher nonverbal gestural behavior and reflected qualities within contexts of art teaching-learning situations, the researcher and 6 judges used the instrument in observing 3 student teachers randomly selected from the video recorded sample of 15 student teachers. The instrument is presented in Appendix B, page 99.

Selection of Judges

The selection of judges was directly dependent upon the degree of sophistication required for the use of the instrument to ascertain the relation between student teacher nonverbal behavior and reflected qualities in art teaching-learning situations. Since the judges' task would be to make discriminations concerning qualities of gestural behavior relative to student teachers' teaching behavior, judges were selected on the basis of their experience in the training and supervision of student teachers in art. All the judges were doctoral candidates in residence at The Pennsylvania State University, Summer Term, 1969, and represented diverse geographic locations in the United States.

In their professional careers, all the judges had been responsible for the training and supervision of student teachers in art. Two of the judges serve as chairmen of departments of art education, one in the northwest, one in the northeast. One judge is an art supervisor of a public school system in New England. One judge is responsible for training and supervision of student teachers in the elementary grades in the southeast; and two of the judges have been responsible for training and supervision of student teachers in secondary schools, one judge in the southwest, and the other in the southeast.

Procedures for Training Judges

Training sessions for judges were conducted during a three week period, and during that time, each judge averaged approximately 16 hours of formal training. The video recorded observations of student teachers that had been utilized in the verification of the typology of nonverbal behavior and in the development of the instrument for systematic observation were utilized for the training of judges. In all training sessions, as well as in the final judging, the audio portion of the video

recordings was not utilized so that nonverbal gestural behavior was the dominant and only modality expressive of student teacher behavior in art.

Judge training was initiated by introduction of the categories of nonverbal gestural behavior and the signs of patterned body motion and directional focus characteristic of each category as is shown in Appendix C, page 101. Segments of video recorded observations of student teachers were viewed on a 24-inch screen television monitor positioned at eye level for ease of observation by judges. Segments of three different video recordings of student teachers were presented to the judges to enable them to become familiar with signs of patterned body motion and directional focus characteristic of each of the gestural behavior categories. After sufficient training had been provided so that judges were familiar with the signs of gestural behavior and their appropriate categories, they were requested to view the recordings and to write terms descriptive of qualities characteristic of the behavior viewed. Discussion of the written observations of qualities preceded the introduction to the categories descriptive of qualities as presented on page 28 of this chapter. The method used for familiarizing judges with the categories of nonverbal gestural behavior was then employed for the categories descriptive of qualities.

The judges were next introduced to the instrument for systematic observation, which is illustrated in Appendix B, page 99. The judges were trained in the use of the instrument by first making judgments at their own rate while viewing video recorded samples of student teachers' behaviors. During this period of training, all necessary clarification required concerning discriminations among all categories was provided. The following guidelines were presented to judges to facilitate scoring in use of the instrument.

1. Eye Contact: Judge all eye positions that can be seen. Category is primarily one of focus. Use zero only when head is in a position where eye position, motion or focus cannot be discerned.
2. Facial Motion: Category includes position as well as motion. Includes all feature motions such as smiles, frowns, raised eyebrows, etc., as well as composite facial position or expression such as "passive," "perplexed," "sarcastic," "enthusiastic," etc.
3. Head Motion: All head positions as well as motions are judged.
4. Body Posture: Primarily a positional category and not a motion category.
5. Body Motion: Primarily a motion category. When no evidence of motion is discernable score zero.
6. Arm-Hand-Finger Motion: Category is one of position and motion.

7. Directed Arm-Hand-Finger Motion: Category is one of position and motion, characterized by touching, pointing and manipulating behaviors.

8. Arm-Hand-Finger Motion and Directed Arm-Hand-Finger Motion are two distinct categories. When no evidence of the behaviors contained in either category are discernible, whether it be one or both arms-hands, score zero.

9. In judging qualities of nonverbal behavior in each category remember that only an intuitive judgment is to be made, i.e., no analysis.

10. Do not give the student teacher "benefit of the doubt," judge on first intuitive perception only.

An audio tape with a recorded tone at three second intervals was employed to facilitate the rate of scoring while judges used the instrument with the video recordings. Analyses of the data collected in these training sessions was conducted in order to ascertain the objectivity of judge discriminations. When all judges were performing at the proper rate in scoring with the instrument, that is, at three second intervals, and gave evidence of objectivity in their judgments, they were presented a 30-minute video recorded sample of a student teacher not viewed previously. Coefficients of observer agreement was calcualted on the data from this sample using Scott's coefficient "pi." (45) The range of agreements of the coefficients was from .65 to .82, and .72 was the mean agreement of the coefficients. A final training session was held prior to the final judging wherein procedures for use of the instrument of systematic observation were reviewed, and three 30-minute video recorded samples of student teacher behavior presented. All the judges had previously utilized the instrument with various segments of the sample represented.

Procedures to Determine Reliability and Validity of the Instrument for Systematic Observation

Video recordings of 3 student teachers, randomly selected from the sample of 15 drawn for the study, were used to determine reliability and validity of the instrument to determine the relation between student teacher nonverbal behavior and reflected qualities within contexts of art teaching-learning situations.

Audio tones were recorded on each 30-minute video sample at 3-second intervals to facilitate the category plus time unit means of scoring the instrument, and to further assure a more accurate descriptive analysis of the data. Each video recorded sample represented a different student teacher in an art teaching-learning situation with children and youth. One sample represented an arts and crafts class with third and fourth grade level children; another, arts and crafts with children of fifth and sixth grade level; the third sample represented a drawing and painting class comprised of pupils from the ninth through the twelfth grade.

Three judging sessions were conducted; one session for two judges, and two sessions for three judges. The three video recorded samples to be analyzed were presented at each judging session using a random ordering procedure for viewing. The video recordings were viewed on a 24-inch television monitor placed at eye level to the judges and at a comfortable distance for accurate viewing. A brief verbal review of procedures employed in scoring the instrument, as well as a five minute "warm-up" using the instrument with a segment of video recorded observation familiar to the judges, was conducted prior to the actual judging procedure.

The total frequency of simultaneous categorizations of gestural behaviors and terms descriptive of qualities by the 7 judges for the sample of 3 video recordings numbered 12,600 within a total of 1,802 episodes of nonverbal behavior.

CHAPTER III

RELIABILITY AND VALIDITY OF THE INSTRUMENT FOR SYSTEMATIC OBSERVATION

Introduction

The criteria usually associated with behavioral observation measures provided the rationale for the procedures used to ascertain the reliability and validity of the instrument for systematic observation of student teacher nonverbal behavior.

According to Kerlinger, (32:507) the reliability of behavioral observation measures is usually defined as agreement among observers. In establishing reliability, percentage of agreement between expert judges is most often used to determine the reliability of the assignment of behaviors to categories. The reliability of observations is estimated by correlating the observations of expert judges.

It is assumed that if a measure is valid it will also be reliable, although, it cannot be assumed in turn, that if a measure is reliable it will also be valid. Content validation, however, consists essentially in judgment, and as such, each item comprising its content must be judged for its relevancy to the property being measured. In establishing content validity other expert judges, being furnished with specific directions for making discriminations and also with specifications of what they are judging, must also judge the content of these items. A method for pooling these independent judgments must then be utilized. (32:446,447)

In this study, the representativeness of the video recorded sample of student teachers in diverse art teaching-learning situations, the procedures employed in making judgments, and the judgments of the expert judges all seem to meet the requirements for ascertaining the reliability and validity of the instrument. As the expert judges provide the only measurements for establishing content validity and reliability, the criteria for behavioral observation previously enumerated guided the rationale for the simultaneous establishment of content validity and reliability of the instrument for systematic observation.

Reliability in Terms of Percentage of Agreement

In order to establish judge reliability as a measure of the relation between student teachers' gestural behaviors and reflected qualities, it was important to ascertain the extent of judge agreement between the researcher and the six expert judges in categorizing gestural behaviors and reflected qualities. The three areas in which the percentage of agreement was to be ascertained included: (1) the categorization of gestural behaviors; (2) the categorization of reflected qualities of

gestural behaviors; (3) the categorization of the over all qualitative effects (supportive, neutral or unsupportive) of student teachers' gestural behaviors.

In determining percentage of agreement between the researcher and the six expert judges, the following questions were asked:

1. What percentage of the number of gestural behaviors located by the researcher in each of the seven categories was identified by the judge as falling into the same category? (Percentage of agreement between the researcher and judge for each category.)
2. What percentage of the total number of gestural behaviors categorized was located by the judge in the same appropriate categories as the researcher? (Percentage of agreement between researcher and judge over all seven categories.)
3. What percentage of the number of reflected qualities located by the researcher in each of the eight categories was identified by the judge as falling into the same category? (Percentage of agreement between the researcher and judge for each category.)
4. What percentage of the total number of reflected qualities categorized by the judge was located in the same categories as the researcher? (Percentage of agreement between the researcher and judge over all eight categories.)
5. What percentage of the total number of gestural behaviors categorized by the judge was located in the same categories of qualitative effect as the researcher? (Percentage of agreement between researcher and judge relative to supportive, neutral or unsupportive categories.)

The percentage of agreement between the researcher and the six expert judges was obtained by the statistical procedure, Frequency Analysis with Chi-square. This analysis computed the frequency of judgments by the researcher and each of the judges for each category of gestural behavior and reflected qualities for the video recorded sample of each student teacher. The percentage of agreement was based on the total number of identical qualities within identical gestural behavior categories scored by the researcher and a judge, divided by the total number of judgments of that quality in that same category of gestural behavior made by the researcher. That is, if the researcher for 86 occurrences of judged Facial Motion behavior, further judged 25 of those occurrences to be Enthusiastic, the judge, in order to agree 100 percent with the researcher, would also have to score those same 25 occurrences as Enthusiastic. Similarly, if no judgments by the researcher and a judge were made for any particular quality within a judged occurrence of gestural behavior, this also constituted 100 percent agreement between the judge and the

researcher. The rationale for no judgment of a particular quality by the researcher and a judge to constitute 100 percent agreement was based on the fact that for each judged occurrence of gestural behavior, judgments are made with regard to distinct quality categories. It is logical to assume that a student teacher's gestural behavior may not evoke all particular qualities throughout an art teaching-learning situation. If a student teacher were to be judged "highly supportive," that would mean his gestural behavior would consistently evoke the qualities contained primarily in categories 1, 2, and 3; those qualities considered to be "unsupportive," under categories 5, 6, and 7, would be infrequently reflected by his gestural behavior (or not at all). Thus, the fact that when a judge and the researcher both agreed on the absence of a particular quality for a judged occurrence of gestural behavior, this would constitute 100 percent agreement; conversely, if either a judge or the researcher made a judgment that a particular quality was reflected by a judged occurrence of gestural behavior, this would constitute zero percent or no agreement.

For data analysis, the video recordings of the student teacher in the drawing and painting class with high school pupils is identified as Teacher 1; the video recording of the student teacher in the arts and crafts class with third and fourth grade pupils is identified as Teacher 2; and the video recording of the student teacher in the arts and crafts class with fifth and sixth grade pupils is identified as Teacher 3. A total of 12,600 simultaneous gestural behavior and reflected quality judgments were made for a total of 1,806 episodes of gestural behavior for the entire video recorded sample of 3 student teachers. Table I presents the data regarding the percentage of agreement between all judges and the researcher in the categorization of gestural behaviors for the video recorded sample of 3 student teachers.

TABLE I

PERCENTAGE OF AGREEMENT BETWEEN ALL JUDGES AND THE RESEARCHER IN CATEGORIZATION OF GESTURAL BEHAVIORS OF THREE STUDENT TEACHERS

Video Recorded Sample	Gestural Behaviors							Mean % All Behavior
	A	B	C	D	E	F	G	
Teacher 1	78	81	81	83	77	68	81	78
Teacher 2	65	67	58	64	57	69	77	65
Teacher 3	68	56	53	50	63	67	78	62
Mean %	70	68	64	66	65	68	79	68

The mean percentage of agreement between the judges and the researcher for the entire sample of three student teachers is highest on G, Directed Arm-Hand-Finger Motion and lowest on C, Head Motion. The mean percentage of agreement is next highest on A, Eye Contact. The two categories of B, Facial Motion and F, Arm-Hand-Finger Motion, both with the same mean percentage of agreement, followed in succession by D, Body Posture and E, Body Motion all show a decrement in percentage of agreement. The mean percentage of agreement for the entire video sample is 68 percent. The data reveals that the percentage of agreement is consistently the highest on G, Directed Arm-Hand-Finger Motion for each of the student teachers. However, the highest and lowest percentage of agreement is inconsistent on all other categories of gestural behavior for each of the student teachers. The higher mean percentage of agreement for Teacher 1 is attributed to the notion that this teacher was "less active," spending a greater proportion of time interacting with the total group and with each individual pupil than either Teacher 2 or Teacher 3. Thus, her behavior was more discernible to the judges. In turn, Teacher 3, with the lowest mean percentage of agreement on all categories, was the "most active," spending the least proportion of time interacting with the total group or each individual pupil than either Teacher 1 or Teacher 2. Thus, her behavior was less discernible to the judges.

The data presented on Table II shows the percentage of agreement between all judges and the researcher in the categorization of qualities reflected by gestural behaviors for the video recorded sample of three student teachers.

TABLE II

PERCENTAGE OF AGREEMENT BETWEEN ALL JUDGES AND THE RESEARCHER IN CATEGORIZATION OF REFLECTED QUALITIES OF THREE STUDENT TEACHERS

Video Recorded Sample	Reflected Qualities								Mean % All Qualities
	0	1	2	3	4	5	6	7	
Teacher 1	73	100	59	66	49	81	100	100	78
Teacher 2	73	100	53	61	54	38	88	54	65
Teacher 3	66	62	53	55	45	54	78	81	62
Mean %	71	87	55	61	49	58	89	78	68

Table II reveals that the mean percentage of agreement between the judges and the researcher for the video sample of three student teachers is highest on category 6, Inattentive and lowest on category 4, Neutral. The mean percentage of agreement on all categories show a decrement as follows: 1, Enthusiastic; 7, Disapproval; 0, No Evidence; 3, Clarifying-Directive; 5, Avoidance-Insecurity; and 2, Receptive-Helpful. The mean percentage of agreement for the entire video recorded sample is 68 percent. The percentages of agreement on categories of reflected qualities for each student teacher is inconsistent with regard to the highest and lowest levels of agreement. The mean percentage of agreement on the entire sample as well as that for all reflected qualities of each student teacher is the same as that for categories of gestural behavior. This is due to the fact that in using the instrument for systematic observation, judgments for both categories of gestural behavior and reflected qualities are scored simultaneously by the judges. It is also due to the rationale governing the computation of percentage of agreement on categories of reflected qualities between each judge and the researcher.

Table III presents the data regarding the percentage of agreement between all judges and the researcher in the categorization of gestural behaviors relative to over all qualitative effect, that is, as being either Supportive, Neutral, or Unsupportive for the entire sample of three student teachers.

TABLE III

PERCENTAGE OF AGREEMENT BETWEEN ALL JUDGES AND THE RESEARCHER IN CATEGORIZATION OF QUALITATIVE EFFECT OF THE GESTURAL BEHAVIORS OF THREE STUDENT TEACHERS

Categories	Gestural Behaviors							Mean % Qualitative Effect All Behavior
	A	B	C	D	E	F	G	
Supportive	72	64	63	59	67	62	85	67
Neutral	31	61	46	50	47	52	61	50
Unsupportive	82	72	70	71	74	78	79	75

The mean percentage of agreement between all judges and the researcher in the categorization of qualitative effect of all gestural behavior of the three student teachers is highest on the Unsupportive category (qualities of Avoidance-Insecurity, Inattentive, Disapproval), and the lowest on the Neutral category (Routine Acts). The percentages

of agreement on the three categories of qualitative effect of gestural behaviors is inconsistent with the exception of G, Directed Arm-Hand-Finger Motion for both the Supportive and Neutral categories and F, Arm-Hand-Finger Motion for both the Neutral and Unsupportive categories. The highest percentage of agreement on the Supportive category is on the gestural behavior G, Directed Arm-Hand-Finger Motion and lowest on the gestural behavior D, Body Posture; the highest and lowest percentage of agreement on the Neutral category is on the gestural behavior G, Directed Arm-Hand-Finger Motion and A, Eye Contact respectively; for the Unsupportive category the highest level of agreement is on gestural behavior A, Eye Contact and lowest on C, Head Motion. The data suggests that Unsupportive gestural behavior judgments can be made with more facility than either Supportive or Neutral gestural behavior. This may be due to the notion that with student teachers, Unsupportive behaviors would occur less frequently than Supportive behaviors and therefore, would tend to be more prominent than either Neutral or Supportive gestural behaviors. Gestural behaviors that appear to be neither supportive or unsupportive present the most difficult judgments in that they deal with routine distribution of materials or routine operation of projectors and other equipment. As such, these behaviors may appear to be similar to behaviors judged to be supportive in art teaching-learning situations.

Further evidence relative to the reliability of the instrument was obtained by computing contingency coefficients (46) from a comparison of categorizations of reflected qualities within judged categories of gestural behavior of each judge with the researcher. Categories of reflected qualities having no judgments scored by a judge or the researcher were ignored in the computation. Tables XXV, XXVI, and XXVII, located in Appendix D, page 103, present the contingency coefficients of each judge and the researcher obtained for each of the three teachers. Table IV presents the contingency coefficients of each judge and the researcher in the categorization of reflected qualities within judged categories of gestural behavior for the video recorded sample of three student teachers. The relatively higher contingency coefficients obtained for the researcher and Judge 2 are due to the fact that this judge had worked with the researcher in the final development of the instrument and had more experience in its usage than did the other judges.

Percentage of Agreement Among All Judges

The percentage of agreement of all judges based on the mean percentage of judgments in the categorization of both gestural behaviors and reflected qualities was also computed. The rationale for setting levels of agreement was based on the criterion of four of the seven judges including the researcher agreeing on an occurrence of an item in order to consider that item as being a "real event." Thus, four of the seven judges agreeing constituted 57 percent agreement, five of the seven, 71 percent, six of the seven, 85 percent and all seven judges, 100 percent agreement.

TABLE IV

CONTINGENCY COEFFICIENTS FOR EACH JUDGE AND THE RESEARCHER IN CATEGORIZATIONS OF REFLECTED QUALITIES AND GESTURAL BEHAVIORS OF THREE STUDENT TEACHERS

Categories of Gestural Behavior	J1 with J2	J1 with J3	J1 with J4	J1 with J5	J1 with J6	J1 with J7
A Eye Contact	.80	.66	.67	.59	.57	.64
B Facial Motion	.79	.69	.74	.62	.63	.65
C Head Motion	.81	.63	.62	.66	.62	.63
D Body Posture	.81	.68	.67	.65	.64	.62
E Body Motion	.74	.58	.62	.57	.57	.62
F Arm-Hand-Finger Motion	.61	.50	.60	.68	.62	.62
G Directed Arm-Hand-Finger Motion	.76	.58	.57	.58	.67	.67

Table V presents the percentage of judge agreement for all judges in the categorization of gestural behaviors in terms of the mean percentage of total judgments in each of the gestural behavior categories for each level of judge agreement. The data shows that B, Facial Motion accounts for the highest mean percentage of judgments for both the 71 percent level of judge agreement, with 54 percent of the total mean judgments for the category and the 100 percent level of judge agreement. with 65 percent of the total mean judgments. The lowest mean percentage of judgments is accounted for by E, Body Motion with 20 percent of the total for the category at the 85 percent level of judge agreement and only 10 percent of the total number at the 100 percent level of agreement. For all levels of judge agreement, the mean percentage of total judgments is inconsistent as regards high and low mean percentage of the total number of judgments in all other gestural categories. However, the data reveals that over all, B, Facial Motion, F, Arm-Hand-Finger Motion, G, Directed Arm-Hand-Finger Motion and A, Eye Contact respectively, account for the highest mean percentage of judgments for all levels of judge agreement; while C, Head Motion, D, Body Posture and E, Body Motion account for the least over all mean percentage of judgments relative to all levels of judge agreement.

TABLE V

PERCENTAGE OF AGREEMENT AMONG JUDGES IN CATEGORIZATION OF GESTURAL BEHAVIOR IN TERMS OF THE MEAN PERCENTAGE OF JUDGMENTS FOR THREE STUDENT TEACHERS

Categories of Gestural Behavior	Mean Percentage of Judgments for Three Student Teachers			
A Eye Contact	39	45	41	56
B Facial Motion	35	54	43	65
C Head Motion	44	42	35	40
D Body Posture	46	33	36	20
E Body Motion	43	34	20	10
F Arm-Hand-Finger Motion	37	45	66	39
G Directed Arm-Hand-Finger Motion	37	45	53	56
Percentage of Judge Agreement	57	71	85	100

In using the category plus time unit means of recording judgments, each student teacher's gestural behavior was judged in terms of 86 episodes of gestural behavior (categories A through G) during the 30-minute video recording. By considering a sequence of the seven individually judged categories of gestural behavior (A through G) as comprising an episode of gestural behavior, it was possible to compute the percentage of judge agreement for all judges on the mean percentage of the total number of episodes of gestural behavior. Figure 1 illustrates the percentage of judge agreement for all judges on the entire sample of three student teachers in terms of the mean percentage of judged episodes of gestural behavior.

As illustrated in Figure 1, the percentages of judge agreement at both the 100 percent and 85 percent levels account for 29 percent of the mean number of judgments made at each of these levels. The 71 percent and 57 percent levels of judge agreement account for 23 percent and 12 percent of the mean number of judged episodes of gestural behavior. A total of 81 percent of the mean number of judged episodes of gestural behavior obtain judge agreement at or above the 71 percent level of agreement for the video recorded sample of three student teachers.

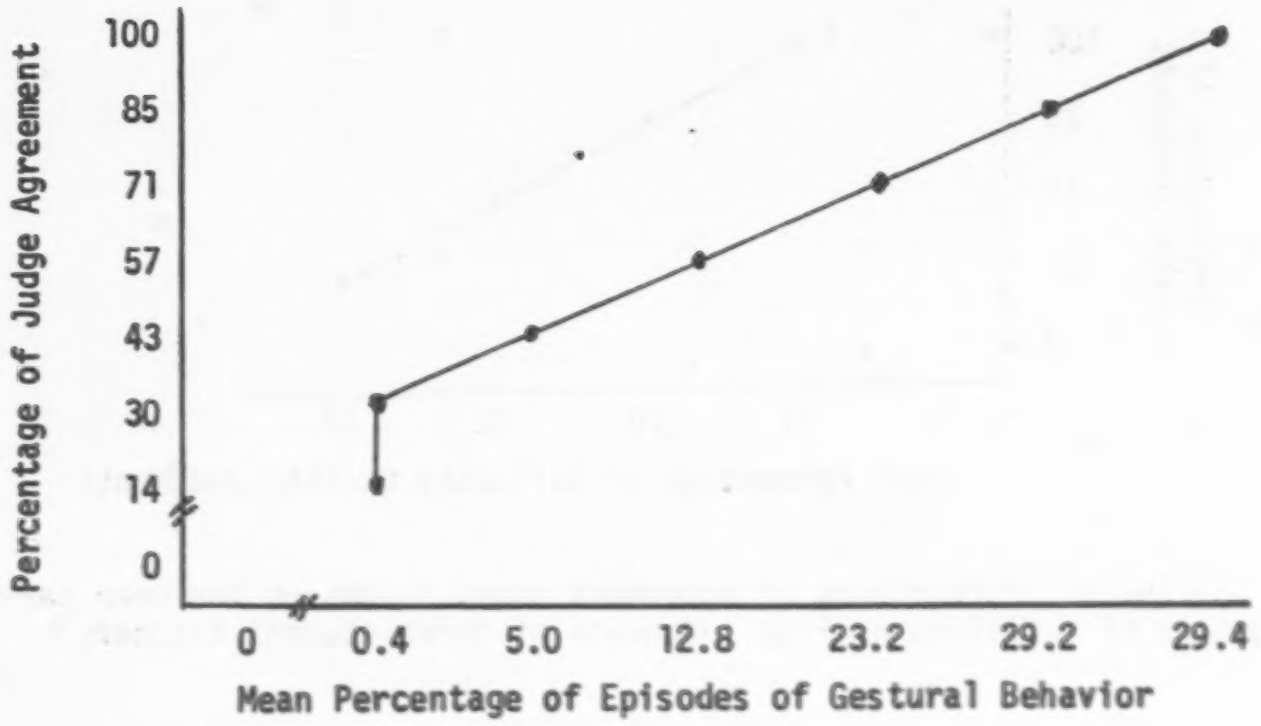


Fig. 1. Percentages of agreement among judges on the mean percentage of judged episodes of gestural behavior of three student teachers.

Figure 2 presents the data as regards the percentage of agreement among judges in categorization of reflected qualities of the three student teachers in terms of mean percentage of total reflected quality judgments at each level of agreement. The highest level of judge agreement, 100 percent, accounts for 11 percent of the total number of reflected quality judgments, while the lowest level of judge agreement, 57 percent, accounts for 37 percent of the total number of reflected quality judgments. Judge agreement at the 85 percent level of agreement and at the 71 percent level of agreement account for 20 percent and 32 percent of the total number of reflected quality judgments made for the three student teachers.

A comparison of data, as revealed in Figure 1 and Figure 2, suggests gestural behaviors can be judged with more facility than can the qualities reflected by those same behaviors. For categories of gestural behavior, the level of judge agreement is highest, 100 percent, for the largest mean percentage of total judgments made, 29.4 percent; while for categories of reflected qualities, the highest percentage of judge agreement, 100 percent, accounts for the least mean percentage of the total number of reflected qualities, that is, 11 percent.

Table VI presents the percentage of judge agreement among judges in the categorization of qualitative effect, that is, Supportive, Neutral and Unsupportive, in terms of the mean percentage of total judgments in

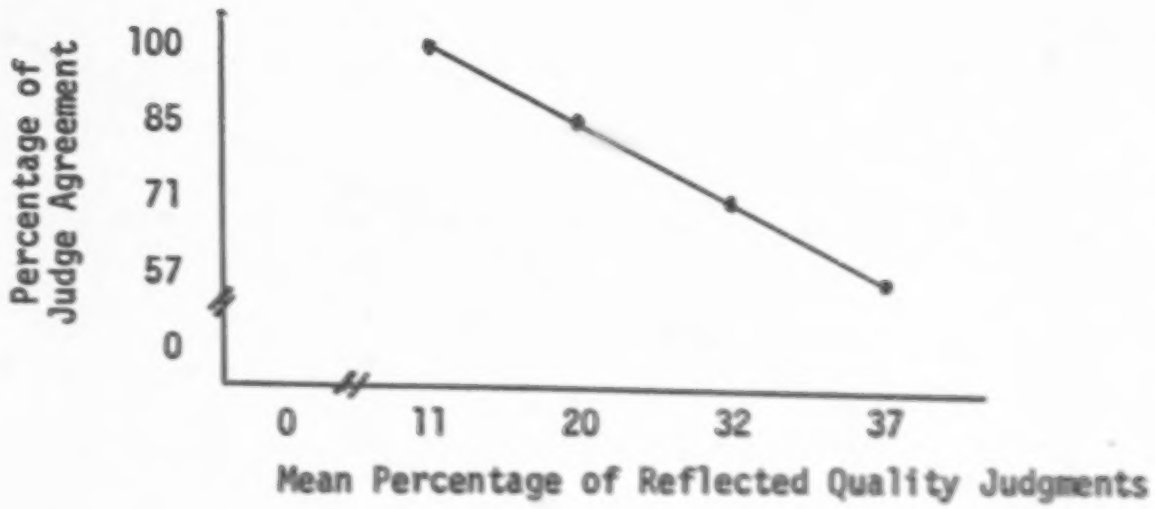


Fig. 2. Percentages of agreement among judges on the mean percentage of reflected quality judgments of three student teachers.

TABLE VI

PERCENTAGE OF AGREEMENT AMONG JUDGES IN CATEGORIZATION OF QUALITATIVE EFFECT IN TERMS OF THE MEAN PERCENTAGE OF JUDGMENTS FOR THREE STUDENT TEACHERS

Categories of Qualitative Effect	Mean Percentage of Judgments For Three Teachers			
No Evidence	21.0	27.0	37.0	54.0
Supportive	58.0	63.0	56.0	45.0
Neutral	09.0	09.0	06.0	00.6
Unsupportive	11.0	00.4	00.0	00.0
Percentage of Judge Agreement	57	71	86	100

each category for each level of judge agreement. The highest percentage of judge agreement, 100 percent, is obtained on the category No Evidence with 54 percent of the mean number of judgments and the next highest with 45 percent of the judgments on the Supportive category. At this level of agreement no judge agreement is obtained for the Unsupportive category and only .6 of one percent of the judgments are accounted for by the Neutral category. At the 85 percent level of judge agreement, 37 percent of the judgments are accounted for by the category No Evidence and 56 percent, the highest total at this level, are accounted for by the Supportive category. The mean percentage of judgments at the 85 percent level for both the Neutral and Unsupportive categories are the same as that for the 100 percent level of judge agreement. For the 71 percent level of agreement, No Evidence accounts for 27 percent of the mean number of judgments, while the highest percentage is on the Supportive category with 63 percent and the lowest on the Unsupportive category with .4 of 1 percent. The Neutral category accounts for 9 percent of the judgments at this level of agreement. At the 57 percent level of judge agreement, the Supportive category is highest with 58 percent of the mean judgments and lowest on the Unsupportive category with 11 percent of the judgments. The Neutral category accounts for 9 percent and the category No Evidence, 21 percent of the mean number of judgments made at this level of agreement.

The data suggests that, for the sample of three student teachers, the trend of judgments in the categorization of qualitative effect for all levels of judge agreement is primarily Supportive (Enthusiastic, Receptive-Helpful and Clarifying-Directive) rather than Unsupportive (Avoidance-Insecurity, Inattentive and Disapproval). It should be noted that the category No Evidence, accounting for the next highest mean percentage of total judgments in categorization of qualitative effect over all percentages of judge agreements, is used in those instances when an occurrence of gestural behavior and reflected quality is not discernible to the judges. As such, the high mean percentage of judgments in this category is a reflection upon the technical proficiency of the video recording procedure and not the ability of the judges to make appropriate judgments.

Summary

The instrument for systematic observation of student teacher nonverbal behavior has been shown to have some degree of content validity and reliability as measured by the criteria of behavioral observation. Validity and reliability has been evidenced in terms of the ascertained percentages of agreement between the six judges and the researcher and among all judges, and the statistical treatment of the independent categorizations of the six judges and the researcher.

The degree of validity and reliability obtained by the instrument for systematic observation served as a basis for the employment of further descriptive statistical procedures relative to student teachers'

gestural behavior and reflected qualities, and the relation of these behaviors to all contexts of art teaching-learning situations. The data revealed by these analyses are discussed in Chapter IV.

CHAPTER IV

ADDITIONAL DESCRIPTIVE ANALYSES OF THE INSTRUMENT FOR SYSTEMATIC OBSERVATION

Introduction

Further descriptive analyses of the data obtained from use of the instrument for systematic observation of nonverbal behavior was made to ascertain frequency of judgments relative to particular categories of gestural behaviors and terms descriptive of qualities, as well as patterns of gestural behavior and their qualitative effects within the art teaching-learning situations contained in the video recorded sample. Factor analysis, as a method of construct validity, was employed (1) to ascertain whether the theoretical constructs basic to the instrument for systematic observation accounted for the influence among categories of gestural behavior, and (2) to ascertain the extent of independence between these constructs relative to all contexts of the art teaching-learning situations contained in the three video recordings.

Analysis in Terms of Mean Percentages of Judgment

The mean percentage of judgment based on the total frequency of both gestural behaviors and reflected qualities was computed for the three video recordings. However, for the analysis of the categorization of gestural behaviors and reflected qualities no computation was made for the category 0, No Evidence, as its use represented those instances when judges found no occurrence of a particular gestural behavior and reflected quality due to technical limitations of the video recording procedure.

Figure 3 illustrates the mean percentage of total judgments in the categorization of gestural behavior contained in the video recorded sample of three student teachers. The highest mean percentage of judgments occur in Body Posture with 18 percent of the judgments, and the lowest mean percentage, 9 percent, occurs in Arm-Hand-Finger Motion. Head Motion accounts for the next highest mean percentage of judgments with 17 percent, followed by Body Motion with 16 percent of the total; the two categories, Eye Contact and Facial Motion obtain the same mean percentage of judgments, 14 percent, while Directed Arm-Hand-Finger Motion accounts for 11 percent of the total judgments.

Table VII presents the mean percentage of total judgments in the categorization of terms descriptive of qualities reflected within each category of gestural behavior for the sample of three video recordings.

The data shows that the mean percentage of judgments for the reflected quality, Enthusiastic, ranges from a low of .3 of 1 percent for the gestural categories Directed Arm-Hand-Finger Motion and Body Motion to a high of 1 percent for Facial Motion. The gestural category,

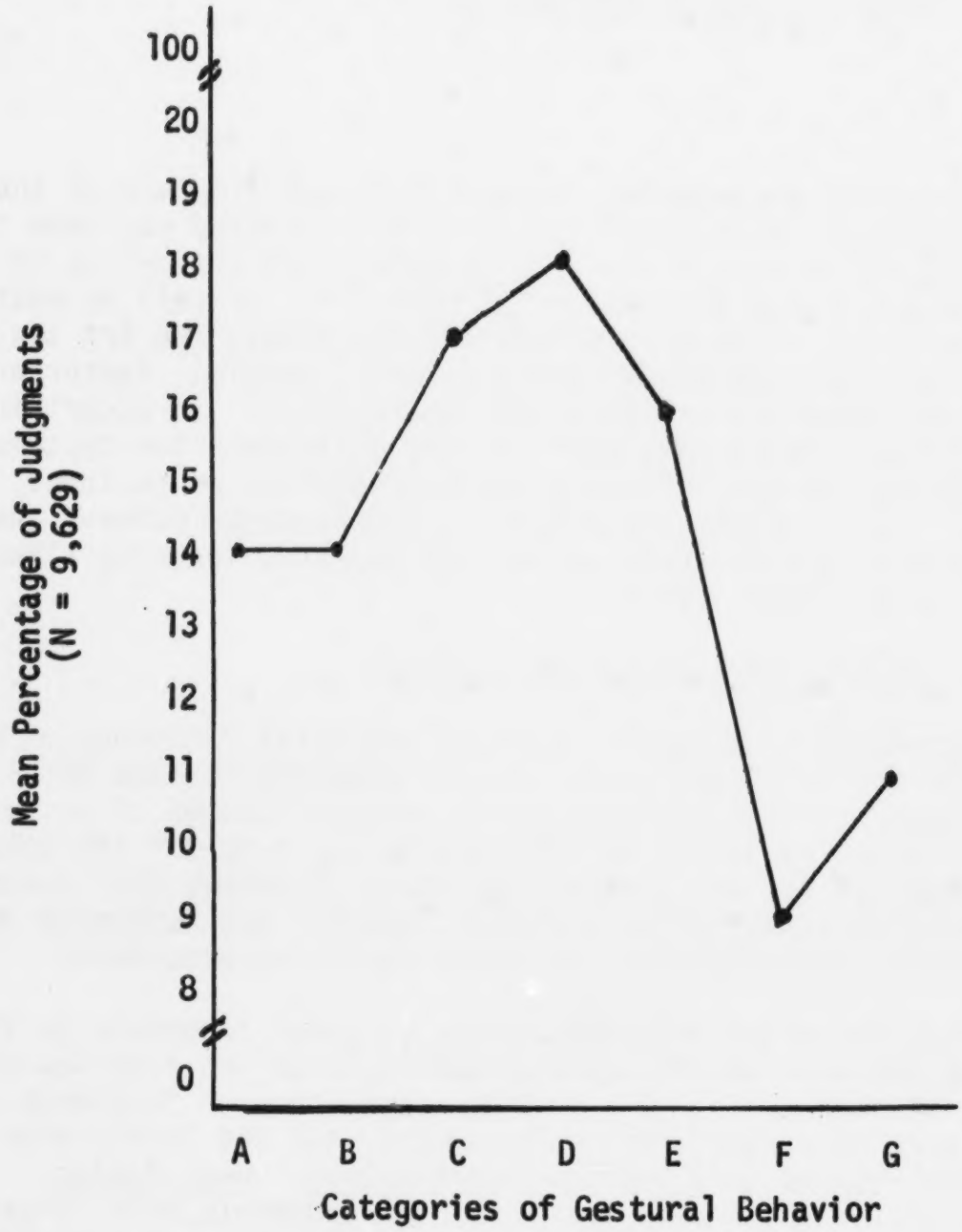


Fig. 3. Mean percentage of total judgments in categorization of gestural behaviors for the three video recordings.

TABLE VII

MEAN PERCENTAGE OF TOTAL JUDGMENTS OF REFLECTED QUALITIES WITHIN EACH CATEGORY OF GESTURAL BEHAVIOR FOR THE THREE VIDEO RECORDINGS
(N = 9,629)

Reflected Qualities	Categories of Gestural Behavior						
	A	B	C	D	E	F	G
1. Enthusiastic	00.7	01.3	00.4	00.5	00.3	00.5	00.3
2. Receptive-Helpful	38.5	37.4	27.9	23.7	28.0	20.4	04.2
3. Clarifying-Directive	52.5	52.3	54.0	49.5	48.6	52.4	36.6
4. Netural	04.7	05.9	14.7	20.5	18.3	21.7	52.3
5. Avoidance-Insecurity	01.9	01.8	01.3	04.6	03.3	03.4	06.1
6. Inattentive	00.0	00.0	00.2	00.3	00.3	00.2	00.0
7. Disapproval	01.4	01.0	01.2	00.9	01.0	01.3	00.3

Eye Contact accounts for the next highest mean percentage of judgments for the quality, Enthusiastic, followed by Body Posture, and Arm-Hand-Finger Motion. The quality, Receptive-Helpful, obtains the highest mean percentage of judgments for Eye Contact with 38 percent, and the lowest mean percentage of judgments for Directed Arm-Hand-Finger Motion with 4 percent of the judgments. All other gestural behaviors show a decrement in mean percentage of judgments for Receptive-Helpful as follows: Facial Motion, Body Motion, Head Motion, Body Posture, and Arm-Hand-Finger Motion. The highest mean percentage of judgments for the reflected quality, Clarifying-Directive, occur in Head Motion, accounting for 54 percent, and the lowest mean percentage of judgments occur in Directed Arm-Hand-Finger Motion with 36 percent of the judgments made. The next highest mean percentage of Clarifying-Directive judgments are for Eye Contact followed by Arm-Hand-Finger Motion, Facial Motion, Body Posture, and Body Motion. Directed Arm-Hand-Finger Motion accounts for the highest percentage of Neutral judgments with 52 percent of the total, while Eye Contact accounts for the least percentage of Neutral quality judgments with 3 percent of the total. The next highest mean percentage of judgments for the reflected quality, Neutral, are obtained in Arm-Hand-Finger Motion, Body Posture, Body Motion, Head Motion, and Facial Motion respectively. For the reflected quality, Avoidance-Insecurity, the mean

percentage of judgments range from a low of 1 percent in the three gestural categories Eye Contact, Facial Motion, and Head Motion to a high of 6 percent in Directed Arm-Hand-Finger Motion. Body Posture accounts for the next highest mean percentage of judgments for Avoidance-Insecurity followed by Body Motion and Arm-Hand-Finger Motion. No judgments are found in Eye Contact, Facial Motion or Directed Arm-Hand-Finger Motion for the reflected quality, Inattentive. The highest mean percentage of Inattentive judgments is the same, .3 of 1 percent, for Body Posture and Body Motion, while Head Motion and Arm-Hand-Finger Motion account for 2 percent of the total quality judgments Inattentive. For the quality, Disapproval, the mean percentage of judgments range from .3 of 1 percent in Directed Arm-Hand-Finger Motion to 1 percent in Eye Contact, Facial Motion, Head Motion, Body Motion and Arm-Hand-Finger Motion. Body Posture accounts for .9 of 1 percent of the judgments for the reflected quality, Disapproval.

The data illustrated in Figure 4 shows the total mean percentages of judgment in the categorization of reflected qualities for all gestural behaviors of the three student teachers contained in the video recorded sample. Clarifying-Directive, obtains the highest mean percentage of the total reflected quality judgments for the sample with 49 percent. The reflected qualities all show a decrement in the mean percentage of total judgments as follows: Receptive-Helpful, 26 percent; Neutral, 20 percent; Avoidance-Insecurity, 3 percent; Disapproval, 1 percent; Enthusiastic, .5 of 1 percent; and Inattentive, .1 of 1 percent. The two qualities, Clarifying-Directive and Receptive-Helpful, account for 75 percent of the total judgments made for the three recordings, while 20 percent of the total judgments are judged to be Neutral behaviors. The qualities, Enthusiastic, Avoidance-Insecurity, Inattentive, and Disapproval account for approximately 5 percent of the total judgments made for the three video recordings.

Figure 5 illustrates the mean percentage of total judgments in categorization of three qualitative effects, namely Supportive, Neutral and Unsupportive for the three video recordings. The data shows that the mean percentage of the total judgments is highest in the Supportive category (reflected qualities: Enthusiastic, Receptive-Helpful, Clarifying-Directive) and the lowest mean percentage of judgments is in the Unsupportive category (reflected qualities: Avoidance-insecurity, Inattentive, Disapproval). The Supportive category contains the highest mean percentage of judgments, 76 percent, followed by the Neutral category with 20 percent, and the Unsupportive category accounts for 4 percent of the total number of judgments made for the three video recordings.

The data presented in Figures 4 and 5 show that for this sample, student teacher's gestural behaviors reflect those qualities that are highly supportive and only negligibly unsupportive in their qualitative effects within art teaching-learning situations. That is, those particular qualities categorized as Unsupportive, which evoke qualities of avoidance, insecurity, insensitivity, or impatience, as well as those of

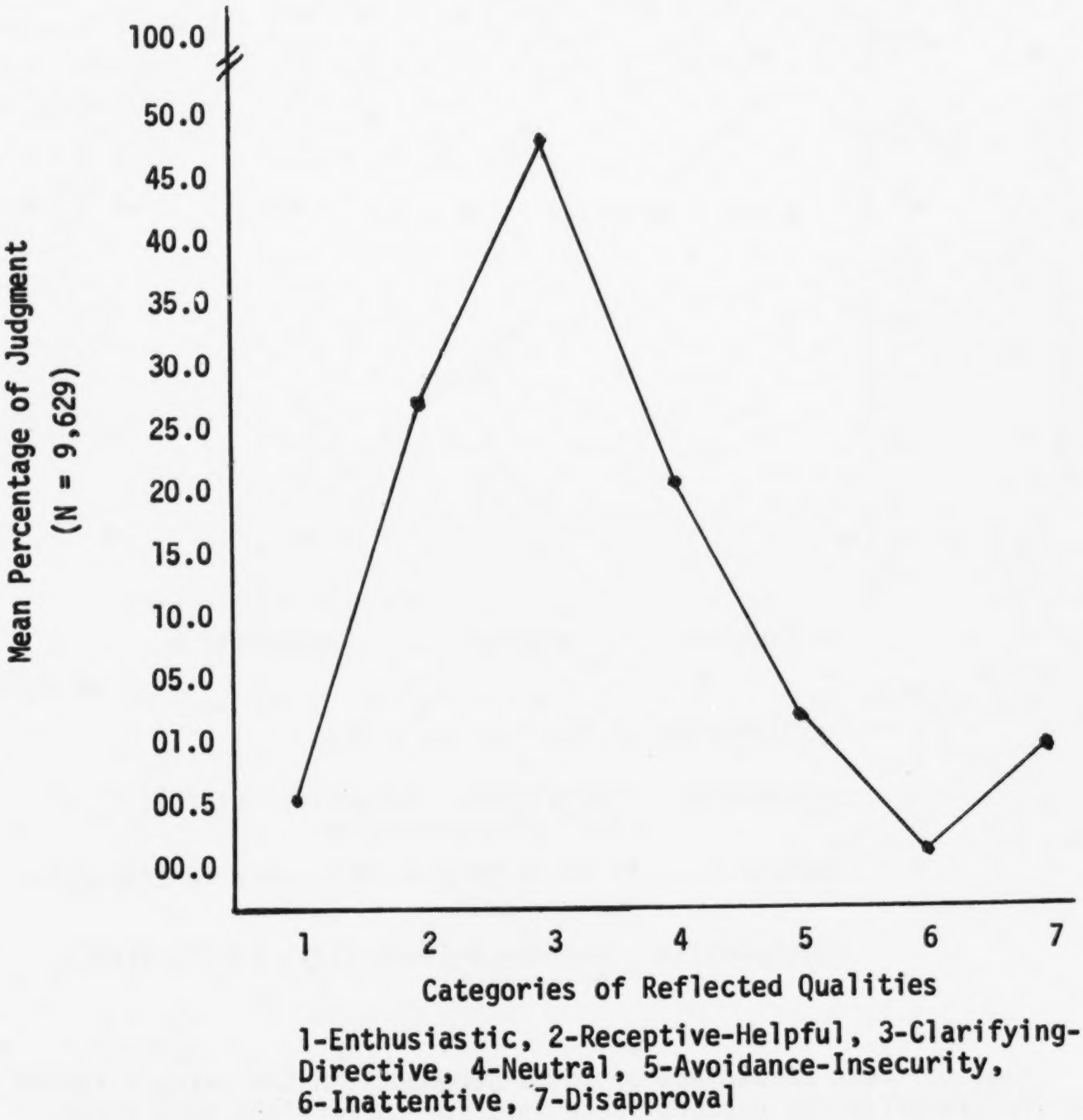
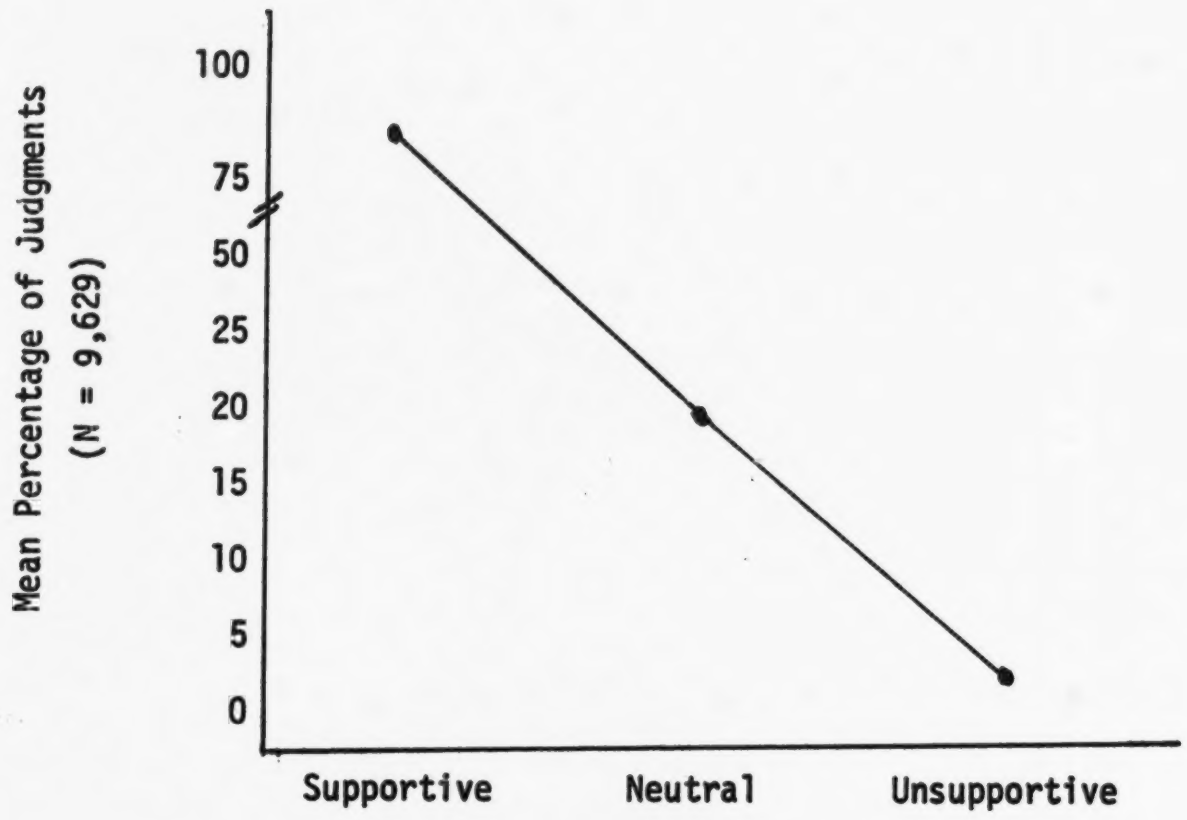


Fig. 4. Mean percentage of total judgments in the categorization of reflected qualities for three video recordings.



Categories of Qualitative Effect

Supportive: Enthusiastic, Receptive-Helpful, Clarifying-Directive

Neutral: No Supportive or Unsupportive Effect, routine acts

Unsupportive: Avoidance-Insecurity, Inattentive, Disapproval

Fig. 5. Mean percentage of total judgments in the categorization of qualitative effect of gestural behaviors for three video recordings.

disapproval, disparagement, dissatisfaction or other negative overtones within the art teaching-learning situation are least reflected; those particular qualities categorized as Supportive, which evoke primarily qualities of clarification, elaboration, direction or guidance, as well as qualities of attentiveness, patience, acceptance or approval within the art teaching-learning situation are the ones most often reflected in the three video recordings. Thus, the qualitative effects as reflected by student teachers' gestural behaviors in this sample are similar to those that would be expected of mature teachers in art teaching-learning situations.

Construct Validity of the Instrument for Systematic Observation

Construct validity is regarded as an important method to further ascertain the validity of observation measures. (32:507) Construct validation provides a means to determine to what extent relations exist between constructs which make up the theoretical framework of the measure thus,suggesting whether particular constructs or factors are operating independently of one another. By ascertaining the meaning constructs have in relation to other constructs "factor analysis can be conceived as a construct validity tool." (32:671)

All techniques of factor analysis begin with a complete table of intercorrelations among a set of variables and end with a factor matrix, that is, a table showing the weight or loading of each of the factors in each variable. According to Kerlinger, (32:671) the variables entered into the correlation and factor matrices can be tests, scales, items, persons, concepts or whatever can be intercorrelated in some way. A common or general factor has positive loadings in all variables. Group factors are obtained when only certain variables have positive loadings, the others being zero or negative. Thus, the nature of a particular factor can be seen from examining the variables obtaining high loadings on the factor and attempting to ascertain what meanings they have in common. The more there are with high loadings on a given factor, the more clearly can the nature of the factor be defined. Very low factor loadings can be ignored as they are representative of chance fluctuations from zero and are of little help in identifying factors.

Correlation Coefficients Based on a Comparison of Judged Categorizations of Gestural Behavior

Basic to factor analytic technique are the intercorrelations among the variables of a measure. Correlation coefficients were computed from the judgments made in each category of gestural behavior for all episodes contained in the video recorded sample of three student teachers. Correlation coefficients were obtained for all three contexts of art teaching-learning situations, as well as separately for the task-setting, demonstration, and evaluation contexts. The data is presented on Tables VIII through XI and coefficients are given to three decimal places.

Table VIII presents the correlation coefficients between categories of gestural behavior for all contexts combined in the video recorded sample of three student teachers. The coefficients presented on Table VIII reveal that A, Eye Contact with B, Facial Motion, D, Body Posture, E, Body Motion, C, Head Motion and G, Directed Arm-Hand Finger Motion are the most closely associated categories for all contexts of art teaching-learning situations. The category C, Head Motion with E, Body Motion and F, Arm-Hand-Finger Motion show the least association between categories for all contexts of art teaching-learning situations.

TABLE VIII

CORRELATION COEFFICIENTS[a] BETWEEN JUDGED CATEGORIZATIONS OF GESTURAL BEHAVIOR IN ALL CONTEXTS IN THREE VIDEO RECORDINGS

N = 258	A	B	C	D	E	F
B	.698					
C	.519	.359				
D	.585	.406	.488			
E	.547	.346	.282	.349		
F	.493	.289	.273	.347	.492	
G	.519	.312	.424	.413	.462	.433

[a]Significant at the .01 level

The correlation coefficients between judged categorizations of gestural behavior of three student teachers for the Task-setting context are presented on Table IX. For the contextual situation, Task-setting, the coefficients show the same trend relative to closeness of association between categories of gestural behavior as those obtained for all three contexts. However, for Task-setting,B, Facial Motion with G, Directed Arm-Hand-Finger Motion and C, Head Motion with E, Body Motion show the least association between categories. Over all, the correlations evidence closer association among all categories of gestural behavior for Task-setting than for all contexts combined within art teaching-learning situations with the three student teachers.

TABLE IX

CORRELATION COEFFICIENTS[a] BETWEEN JUDGED CATEGORIZATIONS OF GESTURAL BEHAVIOR IN THE TASK-SETTING CONTEXT IN THREE VIDEO RECORDINGS

N = 165	A	B	C	D	E	F
B	.706					
C	.521	.324				
D	.546	.372	.470			
E	.525	.334	.313	.305		
F	.557	.393	.335	.392	.532	
G	.519	.288	.430	.439	.455	.485

[a]Significant at the .01 level

Table X presents the correlation coefficients between the judged categorizations of gestural behavior for the contextual situation Demonstration for the three video recordings. The coefficients presented on Table X evidence a higher degree of association between D, Body Posture and C, Head Motion for Demonstration, than for either Task-setting, or all three contexts combined. The categories evidencing the least association among all categories for the Demonstration context are B, Facial Motion with F, Arm-Hand-Finger Motion; F, Arm-Hand-Finger Motion with G, Directed Arm-Hand-Finger Motion; and C, Head Motion with E, Body Motion. Further, F, Arm-Hand-Finger Motion was not significantly correlated with C, Head Motion in the Demonstration context within art teaching-learning situations.

The correlation coefficients obtained between judged categorizations of gestural behavior for the contextual situation, Evaluation, for the video recorded sample of three student teachers are presented on Table XI. The correlation coefficients, among all categories, evidence the least association between categories for the contextual situation of Evaluation than for either Task-setting, Demonstration or all contexts combined. Although the trend of association between A, Eye Contact with all other categories is maintained in the Evaluation context, an exception occurs between A, Eye Contact and F, Arm-Hand-Finger Motion evidencing no significant correlation. Both B, Facial Motion and C, Head Motion are not significantly related to E, Body Motion or F, Arm-Hand-Finger Motion, nor is D, Body Posture significantly associated with F, Arm-Hand-Finger Motion.

TABLE X

CORRELATION COEFFICIENTS[a] BETWEEN JUDGED CATEGORIZATIONS OF GESTURAL BEHAVIOR IN THE DEMONSTRATION CONTEXT IN THREE VIDEO RECORDINGS

N = 44	A	B	C	D	E	F
B	.792					
C	.613	.669				
D	.831	.731	.530			
E	.548	.621	.358[b]	.597		
F	.598	.350[b]	.289[c]	.509	.466	
G	.462	.480	.511	.350[b]	.460	.330[b]

[a]Significant at the .01 level

[b]Significant at the .05 level

[c]Not Significant

TABLE XI

CORRELATION COEFFICIENTS[a] BETWEEN JUDGED CATEGORIZATIONS OF GESTURAL BEHAVIOR IN THE EVALUATION CONTEXT IN THREE VIDEO RECORDINGS

N = 49	A	B	C	D	E	F
B	.602					
C	.461	.321[b]				
D	.587	.369	.554			
E	.594	.260[c]	.171[c]	.375		
F	.151[c]	-.178[c]	.021[c]	.046[c]	.359[b]	
G	.575	.288[b]	.347[b]	.366	.509	.334[b]

[a]Significant at the .01 level

[b]Significant at the .05 level

[c]Not Significant

Factor Analysis Using the Intercorrelations Among Categories of Gestural Behavior

The intercorrelations among the categories of gestural behavior presented on Tables VIII through XI were analyzed factorially using the principal components method of factor analysis. The factor loadings and variance obtained for each factor are presented on Tables XII through XV for all three contexts combined and for the Task-setting, Demonstration and Evaluation contexts for the sample of three student teachers. The factor loadings are given to two decimal places.

Table XII presents the factor loadings obtained for categories of gestural behavior for all three contexts of the art teaching-learning situations contained in the three video recordings.

TABLE XII

FACTOR MATRIX OF GESTURAL BEHAVIOR CATEGORIES
IN ALL CONTEXTS

Categories	1	2	3	4
A Eye Contact	.88	-.13	.22	.02
B Facial Motion	.69	-.34	.56	.13
C Head Motion	.66	-.39	-.44	.07
D Body Posture	.72	-.29	-.20	-.42
E Body Motion	.69	.46	.13	.15
F Arm-Hand-Finger Motion	.65	.52	.01	-.39
G Directed Arm-Hand-Finger Motion	.71	.21	-.35	.42
Percentage of Variance	.52	.13	.11	.08

The data shows that Factor 1 accounts for 52 percent of the variance among all gestural behaviors. Loadings on Factors 2, 3, and 4 account for 13 percent, 11 percent and 8 percent of the variance. These factor loadings suggest that all gestural behaviors are being influenced by the same general factor.

The factor loadings obtained for the contextual situation, Task-setting, presented on Table XIII, are similar to those obtained for all contexts as shown on Table XII in that Factor 1 accounts for 52 percent of the variance among all categories and further, factor loadings for Eye Contact, Facial Motion and Directed Arm-Hand-Finger Motion are the same. Facial Motion has a factor loading of .69 for all contexts and .68 for the Task-setting context.

TABLE XIII

FACTOR MATRIX OF GESTURAL BEHAVIOR CATEGORIES IN THE TASK-SETTING CONTEXT

Categories	1	2	3	4
A Eye Contact	.88	-.13	.24	-.04
B Facial Motion	.68	-.28	.61	-.03
C Head Motion	.66	-.37	-.39	-.48
D Body Posture	.69	-.36	-.26	.46
E Body Motion	.68	.53	.05	-.22
F Arm-Hand-Finger Motion	.73	.38	.06	.18
G Directed Arm-Hand-Finger Motion	.71	.21	-.38	.09
Percentage of Variance	.52	.12	.11	.08

The factor matrix presented on Table XIV shows that Factor 1 accounts for an even greater percentage of the variance, 60 percent, among gestural behaviors for the Demonstration context; while factor loadings for the Evaluation context, as shown on Table XV, show the lowest percentage of variance common to all behaviors, although the trend is similar to that of all other matrices. Eye Contact, as in all other matrices, obtained the highest factor loadings for both Demonstration and Evaluation.

Varimax Rotation

In order to more clearly ascertain the factors influencing the relation between categories of gestural behavior within contexts of art teaching-learning situations comprising the sample, more objective analyses of the factors obtained was attempted by rotating the factors using the

TABLE XIV

FACTOR MATRIX OF GESTURAL BEHAVIOR CATEGORIES
IN THE DEMONSTRATION CONTEXT

Categories	1	2	3	4
A Eye Contact	.91	.10	-.19	-.14
B Facial Motion	.87	-.18	-.23	.17
C Head Motion	.73	-.48	-.13	-.28
D Body Posture	.85	.18	-.30	.05
E Body Motion	.74	.19	.22	.54
F Arm-Hand-Finger Motion	.63	.58	.28	-.38
G Directed Arm-Hand-Finger Motion	.64	-.40	.61	-.04
Percentage of Variance	.60	.12	.10	.08

TABLE XV

FACTOR MATRIX OF GESTURAL BEHAVIOR CATEGORIES
IN THE EVALUATION CONTEXT

Categories	1	2	3	4
A Eye Contact	.89	.07	.18	.02
B Facial Motion	.61	.49	.45	-.19
C Head Motion	.63	.32	-.59	-.18
D Body Posture	.74	.23	-.33	.40
E Body Motion	.70	-.41	.29	.35
F Arm-Hand-Finger Motion	.26	-.84	-.19	-.08
G Directed Arm-Hand-Finger Motion	.73	-.31	.03	-.42
Percentage of Variance	.46	.19	.12	.08

varimax method of rotation. The rotated matrices of gestural behavior for all three contexts combined, as well as for Task-setting, Demonstration and Evaluation are presented on Tables XVI through XIX. The rotated factor loadings are given to two decimal places.

The varimax rotation presented on Table XVI for all contexts of art teaching-learning situations shows that Head Motion and Body Posture have the highest loadings on Factor I; Body Motion and Arm-Hand-Finger Motion obtain the highest loadings on Factor II; Eye Contact and Facial Motion have the highest loadings on Factor III, and Directed Arm-Hand-Finger Motion obtains the highest loading on Factor IV.

TABLE XVI

VARIMAX ROTATION OF GESTURAL BEHAVIOR CATEGORIES IN ALL CONTEXTS

Categories	I	II	III	IV
A Eye Contact	.40	.35	**.69**	.29
B Facial Motion	.19	.09	**.93**	.09
C Head Motion	**.76**	-.05	.18	.42
D Body Posture	**.80**	.33	.26	.02
E Body Motion	-.02	**.60**	.34	.50
F Arm-Hand-Finger Motion	.20	**.88**	.10	.15
G Directed Arm-Hand-Finger Motion	.27	.24	.13	**.84**

Table XVII presents the varimax rotations for the contextual situation, Task-setting, for the three art teaching-learning situations. Factor I has the highest loading on Head Motion; Factor II on Body Motion, Arm-Hand-Finger Motion and Directed Arm-Hand-Finger Motion; Factor III on Eye Contact and Facial Motion; the highest loading for Factor IV is on Body Posture.

The varimax rotations of gestural behavior for the Demonstration context, presented on Table XVIII, reveals that the highest loading is on Arm-Hand-Finger Motion for Factor I; Eye Contact, Facial Motion, Head Motion and Body Posture have the highest loadings for Factor II; Directed Arm-Hand-Finger Motion obtains the highest loading for Factor III; and for Factor IV, the highest loading is on Body Motion.

TABLE XVII

VARIMAX ROTATION OF GESTURAL BEHAVIOR CATEGORIES
IN THE TASK-SETTING CONTEXT

	Categories	I	II	III	IV
A	Eye Contact	.31	.42	<u>.69</u>	.31
B	Facial Motion	.10	.16	<u>.93</u>	.13
C	Head Motion	<u>.91</u>	.16	.20	.23
D	Body Posture	.22	.14	.26	<u>.87</u>
E	Body Motion	.19	<u>.84</u>	.22	-.05
F	Arm-Hand-Finger Motion	-.02	<u>.74</u>	.28	.31
G	Directed Arm-Hand-Finger Motion	.31	<u>.62</u>	-.00	.47

TABLE XVIII

ROTATED MATRIX OF GESTURAL BEHAVIOR CATEGORIES
IN THE DEMONSTRATION CONTEXT

	Categories	I	II	III	IV
A	Eye Contact	.45	<u>-.77</u>	.14	.28
B	Facial Motion	.06	<u>-.80</u>	.22	.43
C	Head Motion	.05	<u>-.79</u>	.48	-.07
D	Body Posture	.35	<u>-.74</u>	-.02	.42
E	Body Motion	.22	-.26	.24	<u>.87</u>
F	Arm-Hand-Finger Motion	<u>.94</u>	-.19	.15	.17
G	Directed Arm-Hand-Finger Motion	.15	-.21	<u>.90</u>	.24

Table XIX presents the varimax rotation of gestural behaviors for the contextual situation, Evaluation, and shows that Facial Motion and Eye Contact have the most significant loadings on Factor I. For Factor II, Arm-Hand-Finger Motion and Directed Arm-Hand-Finger Motion are significant; Head Motion and Body Posture are significant for Factor III; Body Motion has the most significant loading on Factor IV.

TABLE XIX

ROTATED MATRIX OF GESTURAL BEHAVIOR CATEGORIES IN THE EVALUATION CONTEXT

	Categories	I	II	III	IV
A	Eye Contact	.61	-.24	-.38	.50
B	Facial Motion	.89	.12	-.17	.16
C	Head Motion	.21	-.15	-.90	-.08
D	Body Posture	.14	.06	-.75	.52
E	Body Motion	.22	-.37	-.03	.82
F	Arm-Hand-Finger Motion	-.30	-.81	.02	.25
G	Directed Arm-Hand-Finger Motion	.46	-.72	-.25	15

CHAPTER V

DISCUSSION

Introduction

The findings of the study are derived from the analyses of the data reported in Chapter III and Chapter IV. These Chapters relate primarily to descriptive information of two kinds: content validity in terms of percentages of judge agreement and construct validity using factor analytic procedures. The principal findings of the study are derived from Chapter IV as these findings ascertain to what extent validity of the constructs basic to the instrument for systematic observation is established.

To facilitate clarity in the interpretation of the descriptive analyses, the assumptions basic to the theoretical framework underlying the instrument for systematic observation of nonverbal behavior are discussed in three sections: (1) Content Validity and Reliability, (2) Mean Percentages Based on Frequency of Judgment, and (3) Construct Validity.

Content Validity and Reliability

The proposition that gestural behaviors and terms descriptive of qualities could be categorized for the systematic observation of qualities of nonverbal behavior of student teachers in art teaching-learning situations was central to the study.

Content validity of a measure consists essentially in judgment, and items comprising its content must be judged for relevancy to the property being measured by other expert judges furnished with the criteria of the items; a method of pooling the independent judgments must then be utilized. (32:446, 447) As percentage of agreement between expert judges is most often used to determine the reliability of the assignment of behaviors to categories and the reliability of observations is estimated by correlating the observations of expert judges, (32:507) these procedures were employed for the simultaneous establishment of content validity and reliability of the instrument.

The mean percentages of judge agreement between all judges and the researcher in the categorization of student teachers' gestural behavior as shown on Table I, page 39, ranges from a low of 64 percent to a high of 79 percent. The grand mean percentage of agreement obtained in the categorization of gestural behavior is 68 percent. In the categorization of terms descriptive of qualities reflected by gestural behavior, Table II, page 40, the mean percentages of agreement between all judges and the researcher range from 55 percent to 89 percent agreement. The grand mean percentage of agreement in the categorization of qualities reflected by

gestural behavior is 68 percent. For the categorization of over all qualitative effect of student teachers' gestural behavior as shown on Table III, page 41, the mean percentages of agreement between all judges and the researcher range from a low of 50 percent to a high of 75 percent.

Table 5, page 44, shows that the gestural behaviors Facial Motion, Arm-Hand-Finger Motion, Directed Arm-Hand-Finger Motion and Eye Contact account for the highest mean percentage of judgments made for all levels of judge agreement among the judges, while Head Motion, Body Posture and Body Motion account for the least mean percentage of judgments among all judges for all levels of judge agreement. Figure 1, page 45, and Figure 2, page 46, reveal that the highest level of judge agreement among all judges accounts for the highest mean percentage of judgments made for all categories of gestural behavior, and for all categories of reflected qualities, the highest level of judge agreement among judges accounts for the lowest mean percentage of judgments made. In the categorization of the over all qualitative effect of gestural behavior, Table VI, page 46, the percentages of judge agreement at all levels among judges is highest for the Supportive category and lowest for the Unsupportive category.

The correlations of the independent judgments of the seven judges in the categorization of qualities of gestural behavior, as shown on Table IV, page, 43 and Tables XXV, XXVI, and XXVII in Appendix D, page 103, ascertain to what extent reliability of the judges' observations is established.

The percentages of agreement between the six judges and the researcher and among all judges, and the contingency coefficients for the independent categorizations of the six judges and the researcher, attained that measure of agreement predetermined by the researcher for the establishment of content validity and reliability of the instrument for systematic observation. These findings support the studies of Birdwhistell, (10) Davitz, (15) and Hayes (28) namely, that nonverbal behavior is subject to systematic analysis, being a stable measurable phenomenon which evokes qualitative meaning within contextual situations.

Mean Percentages Based on Frequency of Judgment

It was expected that particular gestural behaviors of student teachers in the video recorded sample would reflect particular qualities and further, that these gestural behaviors would reflect an over all qualitative effect within art teaching-learning situations.

Analysis based on mean percentages of total judgment, Figure 3, page 50, shows that the gestural behaviors Body Posture, Head Motion, and Body Motion account for the highest mean percentages of total judgments made in the categorization of gestural behavior. Table VII, page 51, reveals that the reflected quality, Clarifying-Directive accounts for 49, 54, and 48 percent of the judgments for Body Posture, Head Motion and Body Motion, while these same gestural behaviors account for 23, 27, and 28 percent of the reflected quality judgments for the category,

Receptive-Helpful. The data illustrated in Figure 4, page 53, shows that the highest mean percentage of total reflected quality judgments are obtained in the Clarifying-Directive, Receptive-Helpful, and Neutral categories. In the categorization of over all qualitative effects, Figure 5, page 54, the mean percentages of judgment reveal that 57 percent of the total judgments are in the Supportive category, and that only 3 percent of the total judgments are in the Unsupportive category.

These findings seem to relate to those of James (7:520) who found that posture gives general clues as to attitude and that placement of head and trunk contribute most to the interpretation of meaning. In this study, both categories of Body Posture and Head Motion account for the higher percentage of judgments and are judged most often to be Clarifying-Directive and Receptive-Helpful; that is, reflecting a Supportive "attitude." The findings of Galloway (23, 24) and Lail (35) previously reported also seem to be supported by the findings, namely, that qualities of nonverbal behavior can be categorized on a continuum and utilized in systematic observation to verify that these behaviors function as communicative acts within teaching-learning situations.

Construct Validity

Factor analysis, as a means of construct validity, was employed to ascertain to what extent relations exist between the theoretical constructs, types and kinds of nonverbal behavior basic to the instrument of systematic observation. In the study, art teaching-learning situations are defined as comprising three differing contextual situations: (1) Task-setting, (2) Demonstration and (3) Evaluation. It was expected that particular types and kinds of student teacher nonverbal behaviors would function in relation to these contexts within art teaching-learning situations.

The Intercorrelations Among Categories of Gestural Behavior

Basic to factor analytic technique are the intercorrelations among the variables of a measure. Correlation coefficients between categories of gestural behavior obtained for all contexts combined, as well as separately for Task-setting, Demonstration and Evaluation contexts contained in the three video recordings are presented on Tables VIII through XI, pages 56, 57 and 58. The findings indicate that, over all, the categories of gestural behavior do not function with a high degree of independence of one another. However, Head Motion, Body Posture, Body Motion and Arm- Hand-Finger Motion tend to function with consistently greater independence than Eye Contact, Facial Motion or Directed Arm-Hand-Finger Motion. According to Ruesch and Kees, (43:8) patterned body motions function as a continua in time or represent changes over time; that is, this type of behavior "deals with continuous functions" that may be perceived as a single unit of behavior or a series of units comprising

episodes of behavior. Thus, due to the nature of the phenomena under investigation, it is logical to expect that patterned body motion or gesture would not function with a high degree of independence.

Although no test of significance has been made concerning the contexts of art teaching-learning situations in the three video recordings, the findings seem to indicate that the degree of independence between categories of gestural behavior may be related to these contextual situations. For example, of those gestural behaviors shown to function with a greater degree of independence in art teaching-learning situations, only Head Motion and Body Motion are consistently associated with each other in the three contexts combined, as well as separately for the Task-setting, Demonstration and Evaluation contexts (although, for the Evaluation context the association is not significantly different from chance). In the Task-setting and Demonstration contexts, Facial Motion and Arm-Hand-Finger Motion function with greater independence; Arm-Hand-Finger Motion associated with Directed Arm-Hand-Finger Motion is also characteristic of the Demonstration context. Those behaviors shown to function with greater independence in the Evaluation context are Head Motion and Directed Arm-Hand-Finger Motion associated with Facial Motion. The findings of Frijda and Phillipszoon, as well as those of Cline (7:523) also indicate support for the expectation that situational contexts determine the significance of nonverbal expression.

Factor Analysis Using the Intercorrelations Among Categories of Gestural Behavior

The intercorrelations among categories of gestural behavior were analyzed factorially using the principal components method of factor analysis. The factor matrices for all contexts combined and the Task-setting, Demonstration and Evaluation contexts are shown on Tables XII through XV, pages 59, 60, 61, and 62. The expectations basic to the categorization of gestural behavior, as utilized in the instrument for systematic observation, were examined in an attempt to determine what general factors accounted for the influence among all categories of gestural behavior in each of the contextual situations and for all contexts combined.

It may be recalled that two types of nonverbal behavior were expected to be characteristic of student teachers in art teaching-learning situations: that is, Transactional behavior classified as interactive and spatial stimulus gesture, and Non-Transactional behavior classified as image reflecting gesture. The literature gave evidence supporting the expectation that gestural behaviors serve as interactive (7:523) and spatial (22,24) stimuli within art teaching-learning situations; they may be either consciously or unconsciously used (11:52) by student teachers and are reflective of the teachers' direct influence on others; gestural behaviors that are symptomatic of inner states and reflect an individual's attitude are not consciously controlled (7:520) by student teachers within art teaching-learning situations and are reflective of the teachers' indirect influence on others.

In attempting to generalize the one factor accounting for the influence among categories of gestural behavior for all contexts combined and separately for Task-setting, Demonstration and Evaluation, one type of nonverbal behavior can be rationalized for each matrix. That is, for all three contexts and Evaluation, Non-Transactional behavior is suggested to be the general factor; for Task-setting and Demonstration, Transactional behavior is the general factor suggested. For all factor matrices, except that for Demonstration, Eye Contact is not classified as belonging to the general factor suggested; for Demonstration, Body Posture is not classified as belonging to the general factor suggested. Thus, no clear indication as to the common factors functioning in relation to contextual situations was obtained.

Varimax Rotation

A more objective analysis of the factors obtained for all contexts combined and separately for Task-setting, Demonstration and Evaluation was attempted by rotating the factors using the varimax method of rotation. The varimax rotations are shown on Tables XVI through XIX, pages 63, 64, and 65. To more clearly ascertain the particular constructs influencing the relationships among gestural behaviors for the contextual situations contained in the three video recordings, the rotated factors obtaining loadings of .60 or above were examined. For this discussion, these findings are summarized on Tables XX through XXIII.

For the three contexts of art-teaching learning situations, Table XX shows that Head Motion and Body Posture, accounting for the highest loadings on Factor I, are Non-Transactional and image reflecting behaviors. Arm-Hand-Finger Motion and Body Motion characterized as Transactional and spatial stimulus referents account for the highest loadings on Factor II. Factor III is also seen to be Transactional behavior, but is characterized by the interactive stimulus referents of Facial Motion and Eye Contact. Directed Arm-Hand-Finger Motion, which can be either a spatial stimulus or an image reflective referent within art teaching-learning situations, obtains the highest loading on Factor IV and can be classified as either Transactional or Non-Transactional behavior.

The contextual situation of Task-setting is summarized on Table XXI. Head Motion accounts for the highest loading on Factor I and is classified as image reflective and Non-Transactional behavior. Factor II is seen to be Transactional characterized by spatial stimulus behavior as the highest loadings are obtained for Body Motion, Arm-Hand-Finger Motion and Directed Arm-Hand-Finger Motion. Facial Motion and Eye Contact obtain the highest loadings for Factor III and are classified as interactive stimulus referents and Transactional. Factor IV is classified as image reflective and Non-Transactional behavior as the highest loading is on Body Posture.

TABLE XX

ANALYSIS OF THE VARIMAX ROTATION OF GESTURAL BEHAVIOR IN ALL CONTEXTS

Gestural Behaviors	Rotated Factors	Factor Loading	Mode
Head Motion		.78	Non-Transactional/
Body Posture	I	.80	Image Reflective
Arm-Hand-Finger Motion	II	.88	Transactional/
Body Motion		.60	Spatial Stimulus
Facial Motion	III	.93	Transactional/
Eye Contact		.69	Interactive Stimulus
Directed Arm-Hand-Finger Motion	IV	.84	Transactional/ Spatial Stimulus
			Non-Transactional/ Image Reflective

TABLE XXI

ANALYSIS OF VARIMAX ROTATION OF GESTURAL BEHAVIOR IN THE TASK-SETTING CONTEXT

Gestural Behaviors	Rotated Factors	Factor Loading	Mode
Head Motion	I	.91	Non-Transactional/ Image Reflective
Body Motion	II	.84	Transactional/ Spatial Stimulus
Arm-Hand-Finger Motion		.74	
Directed Arm-Hand-Finger Motion		.62	
Facial Motion	III	.93	Transactional/ Interactive Stimulus
Eye Contact		.69	
Body Posture	IV	.87	Non-Transactional/ Image Reflective

Table XXII shows that for the Demonstration context, Factors I, III, and IV are classified as transactional behavior characterized by spatial stimulus referents as the highest factor loadings are on Arm-Hand-Finger Motion, Directed Arm-Hand-Finger Motion and Body Motion respectively. Factor II is ambiguous as it shows two constructs operating; that is, Facial Motion and Eye Contact, classified as Transactional behavior characterized by interactive stimulus referents, and Head Motion and Body Posture classified as image reflective and Non-Transactional behavior.

The data derived from the contextual situation of Evaluation is summarized on Table XXIII. It shows that Factor I is interactive and Transactional, the highest loading being on Facial Motion and Eye Contact. Factor II is seen to be Transactional behavior characterized by spatial stimulus referents as Arm-Hand-Finger Motion and Directed Arm-Hand-Finger Motion obtain the highest loadings on this factor. The third factor is classified as image reflective and Non-Transactional behavior having the highest loading on Head Motion and Body Posture. Factor IV, having the highest loading on Body Motion, is classified as a spatial stimulus referent and Transactional behavior.

TABLE XXII

ANALYSIS OF THE VARIMAX ROTATION OF GESTURAL BEHAVIOR IN THE DEMONSTRATION CONTEXT

Gestural Behaviors	Rotated Factors	Factor Loading	Mode
Arm-Hand-Finger Motion	I	.94	Transactional/ Spatial Stimulus
Facial Motion	II	-.80	Transactional/
Eye Contact		-.77	Interactive Stimulus
Head Motion		-.79	Non-Transactional/
Body Posture		-.74	Image Reflective
Directed Arm-Hand-Finger Motion	III	.90	Transactional/ Spatial Stimulus
Body Motion	IV	.87	Transactional/ Spatial Stimulus

TABLE XXIII

ANALYSIS OF THE VARIMAX ROTATION OF GESTURAL BEHAVIOR IN THE EVALUATION CONTEXT

Gestural Behaviors	Rotated Factors	Factor Loading	Mode
Facial Motion	I	.89	Transactional/
Eye Contact		.61	Interactive Stimulus
Arm-Hand-Finger Motion	II	.81	Transactional/
Directed Arm-Hand-Finger Motion		.72	Spatial Stimulus
Head Motion	III	-.90	Non-Transactional/
Body Posture		-.75	Image Reflective
Body Motion	IV	.82	Transactional/ Spatial Stimulus

It was expected that particular types of nonverbal behavior would account for the relationships among gestural behaviors categorized in the instrument for systematic observation. Further, it was expected that these particular factors would function in relation to the specific nature of differing contextual situations characteristic of teaching-learning situations in art. The findings, as presented on Tables XX through XXIII, indicate that particular types of nonverbal behavior account for the relationships among categories of gestural behavior relative to the contexts within art teaching-learning situations.

A comparison of Tables XX and XXI for the Task-setting context shows that the same factors are operating as for all three contexts in art teaching-learning situations contained in the three video recordings. Factor I is classified as image reflective and Non-Transactional behavior, Factor II is classified as spatial stimulus and Transactional behavior, Factor III is classified as interactive stimulus and Transactional behavior and Factor IV can be classified as image reflective and Non-Transactional behavior. This finding might be expected as Task-setting is the predominant teaching behavior of the three student teachers represented in the sample, accounting for 165 of the total 258 episodes of gestural behavior analyzed.

It was expected that patterned body motion or gestures of student teachers would function as "metacommunicative messages" in relation to the specific nature of contextual situations as defined for teaching-learning situations in art. As previously noted, messages may be regarded as having two aspects: the statement proper and the explanations that pertain to its interpretation. "Thus, when a statement is phrased verbally, instructions tend to be given nonverbally." (43:192) Metacommunicative messages include specific instructions given by the sender as to the way messages ought to be interpreted and the respective interpretations made by the receiver; that is, the implicit instructions determined by a person's role as well as those implicit and explicit instructions that are institutionalized in the structure of situations. (43:7)

Task-setting is characterized by the introduction of or structuring of a topic, ideas, problems or solutions for an individual pupil, a group of pupils or the total class. In attempting to ascertain the meaning of the factors obtained for both Task-setting and all three contexts, the findings suggest that image reflecting Non-Transactional behavior that is not consciously controlled by the teacher is the most significant factor operating in the three video recordings. The intercorrelations between categories of gestural behavior reveal that Head Motion and Body Posture function with consistently greater independence and the data, as presented in Figure 3, page 50, shows that these categories account for the higher mean percentages of judgment. Factor II, spatial stimulus referents and Transactional, obtaining the highest loadings on Arm-Hand-Finger Motion and Body Motion, and Factor III, interactive stimulus referents and Transactional, having the highest loadings on Facial Motion and Eye Contact seem to be related to all contexts and Task-setting. The data on Table VII, page 51, shows that these behaviors account for the higher mean percentages of judgment for the qualities Calrifying-Directive and Neutral (routine acts) and Receptive-Helpful and Clarifying Directive respectively, indicating the appropriateness of these factors to all contexts and to Task-setting. However, by comparing Factors II and IV, a limitation as to the nature of the constructs or the system of categorization of gestural behaviors may be indicated. The notion that Factor IV, as it operates in all contexts, should be classified as a spatial stimulus referent and Transactional is made due to the fact that Directed Arm-Hand-Finger Motion accounts for the highest mean percentage of judgments in the two reflected qualities Clarifying-Directive and Neutral. This same behavioral category, therefore, is seen to be a spatial stimulus referent and Transactional in the Task-setting context as this seems to be a valid function suitable to the nature of the contextual situation. Body Posture having the highest loading on Factor IV in Task-setting is shown to be image reflecting and Non-Transactional. Because of its function in all three contexts, as well as the fact that Body Posture accounts for a higher mean percentage of the total quality judgments and, as shown in Figure 3, page 50, accounts for approximately the same percentage of judgments as Head Motion, it may be that these two categories should be combined in the instrument for systematic observation.

The findings for the Demonstration context, Table XXII, reveal that three Factors, I, III, and IV are classified as spatial stimulus referents and Transactional as Arm-Hand-Finger Motion, Directed Arm-Hand-Finger Motion and Body Motion obtain the highest loadings on these factors. The Demonstration context is characterized by student teacher use of examples of a topic; presentation of problems or solutions by means of visual materials such as art objects or reproductions; or showing technical processes by manipulating materials, tools, or equipment for an individual pupil, a group of pupils or the total class. As such, the gestural behaviors shown to be spatial stimulus referents and Transactional, and having a direct influence on pupils are most appropriate to the nature of Demonstration.

However, Factor II is less clear in its meaning and may indicate a limitation as to the nature of the constructs governing the categorization of the gestural behaviors, Head and Body Motion, as noted above; and also for Facial Motion and Eye Contact. Intercorrelations between Facial Motion and Eye Contact evidence consistently closer associations than between all other categories comprising the instrument; also, the fact that for three of the four factor matrices, Eye Contact did not fit the general factors assumed. It may be that Facial Motion and Eye Contact should be combined in the instrument for systematic observation. The ambiguity reflected by Factor II for Demonstration may also be attributed to the notion that Facial Motion and Eye Contact behaviors of student teachers both reflect conscious and/or unconscious (7:523) alternating focus between object or media being demonstrated and the pupils; while simultaneously, Head and Body Posture behaviors are more predominantly reflective of the student teachers' inner states and attitudes (7:520) than for all other contexts comprising art teaching-learning situations in the three video recordings. This rationale is speculative at best and further attempts to ascertain its validity are needed.

The contextual situation of Evaluation is characterized by student teacher use of judgments or eliciting judgments concerning a topic, ideas, problems, or solutions, from an individual pupil, a group of pupils, or the total class. The findings for the Evaluation context, Table XXIII, are characterized by interactive stimulus referents having a direct influence on pupils; Factors II and IV are classified as spatial stimulus referents also having a direct influence on pupils. Factor III is shown to be image reflective and Non-Transactional; that is, those behaviors not consciously controlled by the teacher reflecting inner states and attitudes and having indirect influence on pupils. These constructs appear to be highly appropriate to Evaluation, as the teacher's role is primarily that of interacting directly with pupils in making or eliciting judgments. Further, spatial stimulus referents of patterned arm, hand and body motions are most likely to be prominent since they are behaviors used by teachers in focusing on art objects representing pupils' solutions.

The findings can be related to the investigations of Eisenson and Boase, (19) Cline, James and Frijda and Phillipszoon (7:520,523) which reveal that nonverbal behaviors appear to function according to type and that their significance is determined by situational factors. The study confirms the assumptions and investigations of Birdwhistell, (9,10) Grey and Braden, (26) Hayes (28) and McBurney and Wrage (39) which reveal that nonverbal behaviors are a predominant aspect of the communication process and further, serve a metacommunication function in the context of interpersonal relations within structured social settings as indicated by the studies of Galloway, (22,24) Goffman (25) and Ruesch and Kees (43).

Accounting for the limitations cited, the findings, as revealed by construct validity procedures, support the assumptions basic to the instrument for systematic observation. The factors that account for the relations among categories of gestural behavior within the contexts of art teaching-learning situations are:

TRANSACTIONAL NONVERBAL BEHAVIOR

Interactive Stimulus Referents

Eye Contact
Facial Motion

Spatial Stimulus Referents

Body Motion
Arm-Hand-Finger Motion
Directed Arm-Hand-Finger Motion

NON-TRANSACTIONAL NONVERBAL BEHAVIOR

Image Reflective Referents

Head Motion
Body Posture
Directed Arm-Hand-Finger Motion

Summary

The proposition and assumptions of the study were partially confirmed by use of the descriptive procedures reported. Although clear confirmation of all factors did not evolve, evidence is presented that the theoretical constructs basic to the typology of nonverbal behavior and terms descriptive of qualities utilized in the instrument for systematic observation provide a valid and reliable index of student teachers' qualitative gestural behavior within contexts of teaching-learning situations in art.

CHAPTER VI

SUMMARY AND CONCLUSIONS

Restatement of the Problem

The basic underlying premise of the study is that nonverbal gestural behavior is characteristic of all human communication and is also a qualitative aspect of teacher communication in the classroom. Qualitative communication is characterized by the utilization of feelings, emotions and attitudes in the expression of ideas and, as such, is a significant dimension of teacher behavior in the teaching-learning process in art.

The study is concerned with the identification and description of nonverbal gestural behavior and the categorization of such behavior as having neutral, supportive or unsupportive affective qualities as evidenced by student teachers in art teaching-learning situations. The study is also concerned with the development of techniques for the systematic observation and analysis of qualitative nonverbal gestural behavior that give evidence of reliability and validity when utilized with student teachers in art teaching-learning situations.

This study represents an attempt to develop a typology of nonverbal behavior and terms descriptive of qualities evoked by that behavior, and to ascertain whether student teacher nonverbal communication behavior can be measured and described by means of the categorization of both nonverbal gestural behaviors and affective qualities observed in video recordings of student teachers in art teaching-learning situations.

Summary of Procedures

Population and Sampling Procedures

The sample for the study consists of 15 video recordings of student teachers in art teaching-learning situations with children and youth. The sample was randomly selected from a population of 40 student teachers enrolled in the course Art Experiences with Children at The Pennsylvania State University. Random sampling procedures were used to determine six 5-minute segments to be recorded for each teacher. As video tape length allowed for a 30-minute sampling, this method insured a sampling of nonverbal behavior of each teacher across the total 120-minute class period. In the sample, student teachers' nonverbal behavior is represented in each of three contexts: (1) In process Task-setting. (2) In process Demonstration. (3) In process Evaluation.

Development of a Typology of Nonverbal Behavior

Qualitative gestural behavior is defined as that aspect of body motion that evokes meaning within contextual situations. It was assumed that gestural behavior of student teachers in art could be observed to

isolate (1) the patterns of body motion used, (2) those aspects of body motion common to all student teachers observed, and (3) the qualities that patterned body motion evokes within contexts of art teaching-learning situations. Data from a pilot study, (48) and the literature dealing with nonverbal behavior yielded evidence supporting the proposition that a typology of nonverbal behavior and qualities evoked by that behavior could be formulated from observation and analysis of video recordings of student teachers in art teaching-learning situations.

Analysis of the 15 video recordings, utilizing the methods developed in the pilot study (48) seemed to substantiate a typology of nonverbal behavior and reflected qualities formulated in that study. An attempt was made to verify the typology by construction of an observation instrument to be utilized by naive observers. The instrument consisted of a total of 102 signs of patterned body motion and directional focus contained in 5 categories of gestural behavior, and 17 terms descriptive of qualities contained in a category of reflected qualities. In utilization of the instrument by 3 observers, a total of 1,567 observations were recorded from a sample of 4 video recorded student teachers. Coefficient of observer agreement, as measured by the contingency coefficient, was 81 percent.

Analysis of the data supported the formulation of a typology of nonverbal behavior of student teachers that would be related to Transactional and Non-Transactional patterns of body motion within contexts of art teaching-learning situations. Gestural behaviors classified as Transactional serve as Interactive and Spatial referents, may be consciously or unconsciously used by student teachers and are reflective of the teachers' direct influence on others. Gestural behaviors classified as Non-Transactional serve as Image Reflective referents, are not consciously controlled by student teachers and are reflective of the teachers' indirect influence on others. A review of the data concerning qualities of nonverbal behavior suggested that categorization of terms descriptive of qualities could be classified on a continuum from supportive to unsupportive within contexts of art teaching-learning situations. The typology of nonverbal behavior and terms descriptive of qualities formulated for the study is outlined below and on the following page.

TYPOLOGY OF NONVERBAL BEHAVIOR

Transactional Behavior

(Interactive and Spatial)

Eye Contact
Facial Motion
Body Motion
Arm-Hand-Finger Motion
Directed Arm-Hand-Finger Motion

TERMS DESCRIPTIVE OF QUALITIES

Supportive

1. Enthusiastic
2. Receptive-Helpful
3. Clarifying-Directive
4. Neutral

TYPOLOGY OF NONVERBAL BEHAVIOR (cont.)

Non-Transactional Behavior

(Image Reflective)

Head Motion
Body Motion
Directed Arm-Hand-Finger Motion

TERMS DESCRIPTIVE OF QUALITIES (cont.)

Unsupportive

5. Avoidance-Insecurity
6. Inattentive
7. Disapproval

Development of an Instrument for Systematic Observation of Nonverbal Behavior

The development of an instrument for systematic observation was based on the need for a method to systematically analyze student teacher nonverbal behavior and the qualities reflected by that behavior within contexts of art teaching-learning situations. A category system for the instrument was conceived on the basis of the simultaneous usage of both gestural behavior categories and categories descriptive of qualities. As the categories descriptive of qualities are seen as a continuum on which qualitative effect is rated as being supportive or unsupportive, it seems appropriate that each category of gestural behavior be judged relative to a particular category descriptive of qualities on the continuum. Enthusiastic behavior is considered to be more supportive than Receptive-Helpful behavior and that behavior, in turn, is more supportive than Clarifying-Directive behavior. Neutral behavior is more supportive than behavior reflecting Avoidance-Insecurity, and that behavior is more supportive than Inattentive behavior. Behavior reflecting Disapproval is considered to be the least supportive in art teaching-learning situations. Thus, for each gestural category, such as Facial Motion, judges were expected to discriminate between the seven qualitative categories and score the appropriate quality based on their perception of that gestural behavior as it occurs in the context of the art teaching-learning situation.

An observation schedule was constructed wherein categories of gestural behavior were organized sequentially beginning with Eye Contact and ending with Directed Arm-Hand-Finger Motion. Space was provided under each gestural category whereby judges were to record a numeral associated with a particular category descriptive of a quality. The numeral 1 was recorded if the behavior was perceived to be Enthusiastic, the numeral 2 for Receptive-Helpful, and so on through the numeral 7 for those behaviors reflecting Disapproval.

The instrument, as it was then formulated, was used by the researcher and an assistant with four video recordings. In testing the reliability of the instrument, the audio portions were not used. Thus, nonverbal gestural behaviors were the dominant modality viewed. Coefficient of observer agreement, as measured by the contingency coefficient, was 85 percent. As

a result of the observations conducted with this sample, it was determined that an additional category was necessary to facilitate use of the instrument. It had been found that when the instrument was used with video recorded observations, there were specific instances when student teacher gestural behavior was not perceivable. Previously, it had not been the practice to make a judgment under those particular categories where student teacher gestural behavior was not observable. However, it was found that it would facilitate the rhythm of recording judgments if a tally were required, especially in those instances where there might be a series of behavioral episodes blocked from the observer's view. The category added was designated, No Evidence, and the numeral zero was used in recording its occurrence.

The data shows that an effective instrument to measure qualities of student teacher gestural behavior has been constructed. A category plus time unit method of recording judgments is used corresponding to the seven gestural behavior categories. Judgments as to the reflected qualities under each category are made at three second intervals. The recorded judgments made for the seven gestural categories, in sequence from Eye Contact through Directed Arm-Hand-Finger Motion is considered to constitute an episode of gestural behavior.

Procedures to Determine Reliability and Validity of the Instrument

To determine reliability and validity of the instrument the researcher and 6 judges used the instrument in observing 3 student teachers randomly selected from the video recorded sample of 15 student teachers. Audio tones were recorded on each 30-minute video sample at 3 second intervals to facilitate the category plus time unit method of scoring the instrument, and to further assure a more accurate descriptive analysis of the data. Each video recorded sample represented a different student teacher in an art teaching-learning situation with children and youth. The total frequency of simultaneous categorizations of gestural behaviors and terms descriptive of qualities by the 7 judges for the sample of 3 video recordings numbered 12,600 within a total of 1,802 episodes of nonverbal behavior.

Summary Analysis of Data

Reliability and Validity of the Instrument for Systematic Observation

In order to establish judge reliability as a measure of the relation between student teachers' gestural behaviors and reflected qualities contained in the three video recordings, these procedures were used: (1) the percentage of agreement between the researcher and the six judges obtained by the statistical procedure, frequency analysis with chi-square; (2) the percentage of agreement among all seven judges based on the mean percentage of total judgments; and (3) correlations of observer agreement obtained by computing contingency coefficients for the independent categorizations of each judge with the researcher. The findings indicate that

the judges were able to obtain an adequate level of agreement as had been predetermined by the researcher for the establishment of content validity of the instrument for systematic observation.

Additional Descriptive Analyses of the Instrument for Systematic Observation

Analyses of the data were made to ascertain frequency of observations relative to particular gestural behavior categories and terms descriptive of qualities, as well as patterns of gestural behavior and their qualitative effects within art teaching-learning situations contained in the three video recordings. Factor analysis, as a method of construct validity, was employed (1) to ascertain whether the theoretical constructs, types and kinds of nonverbal behavior basic to the instrument accounted for the influences among gestural behaviors and (2) to ascertain the extent of independence between these constructs relative to all contexts of the art teaching-learning situations contained in the three video recordings.

The mean percentages based on the frequency of observations reveal that the gestural behaviors, Body Posture, Head Motion, and Body Motion account for the highest mean percentages of observations in the categorization of gestural behavior. The highest mean percentages of quality observations occur in the categories Clarifying-Directive, Receptive-Helpful, and Neutral. In the categorization of over all qualitative effects, the mean percentage of observations show that 57 percent are in the Supportive category, while only 3 percent are in the Unsupportive category.

Varimax rotation of the factors obtained from the inter-correlations of gestural behaviors for the Task-setting, Demonstration, and Evaluation contexts and for the three contexts combined are summarized on Table XXIV, pages 84 and 85.

The findings, as revealed by factor analysis, support the assumptions basic to the instrument for systematic observation. The factors seem to show variance having commonality that could be described as follows:

TRANSACTIONAL NONVERBAL BEHAVIOR

Interactive Stimulus Referents

Eye Contact
Facial Motion

Spatial Stimulus Referents

Body Motion
Arm-Hand-Finger Motion
Directed Arm-Hand-Finger Motion

NON-TRANSACTIONAL NONVERBAL BEHAVIOR

Image Reflective Referents

Head Motion
Body Posture
Directed Arm-Hand-Finger Motion

TABLE XXIV

SUMMARY OF THE VARIMAX ROTATION OF GESTURAL BEHAVIOR FOR THE CONTEXTS OF ART TEACHING-LEARNING SITUATIONS

Gestural Behavior	Rotated Factors	Factor Loading	Mode
THREE CONTEXTS COMBINED			
Head Motion	I	.76	Non-Transactional/ Image Reflective
Body Posture		.80	
Arm-Hand-Finger Motion	II	.88	Transactional/ Spatial Stimulus
Body Motion		.60	
Facial Motion	III	.93	Transactional/ Interactive Stimulus
Eye Contact		.69	
Directed Arm-Hand-Finger Motion	IV	.84	Transactional/ Spatial Stimulus
			Non-Transactional/ Image Reflective
TASK-SETTING CONTEXT			
Head Motion	I	.91	Non-Transactional/ Image Reflective
Body Motion	II	.84	Transactional/ Spatial Stimulus
Arm-Hand-Finger Motion		.74	
Directed Arm-Hand-Finger Motion		.62	
Facial Motion	III	.93	Transactional/ Interactive Stimulus
Eye Contact		.69	
Body Posture	IV	.87	Non-Transactional/ Image Reflective
DEMONSTRATION CONTEXT			
Arm-Hand-Finger Motion	I	.94	Transactional/ Spatial Stimulus
Facial Motion	II	-.80	Transactional/ Interactive Stimulus
Eye Contact		-.77	
Head Motion		-.79	Non-Transactional Image Reflective
Body Posture		-.74	
Directed Arm-Hand-Finger Motion	III	.90	Transactional/ Spatial Stimulus
Body Motion	IV	.87	Transactional/ Spatial Stimulus

TABLE XXIV (Continued)

Gestural Behavior	Rotated Factors	Factor Loading	Mode
	THREE CONTEXTS COMBINED		
	EVALUATION CONTEXT		
Facial Motion	I	.89	Transactional/
Eye Contact		.61	Interactive Stimulus
Arm-Hand-Finger Motion	II	.81	Transactional/
Directed Arm-Hand-Finger-Motion		.72	Spatial Stimulus
Head Motion	III	-.90	Non-Transactional/
Body Posture		-.75	Image Reflective
Body Motion	IV	.82	Transactional/ Spatial Stimulus

Conclusions

It was assumed in this study that nonverbal gestural behavior is characteristic of all human communication and is also a qualitative aspect of student teacher communication in the classroom. It was further assumed that student teachers' gestural behaviors could be observed and analyzed to describe those aspects common to all student teachers observed, and the qualities gestural behavior evoked in the contexts of art teaching-learning situations. These assumptions were drawn primarily from Birdwhistell's theory of Social Kinesics dealing with the visual aspects of interpersonal communication.

Student teacher gestural behavior and the qualities evoked by that behavior were found to be objective elements within contexts of art teaching-learning situations. Analysis of a sample of video recordings of student teachers in art showed that nonverbal gestural behaviors were identifiable as to type and kind. Further, it was possible to describe patterns of affect based on terms descriptive of qualities evoked by gestural behaviors. An instrument for the systematic observation and analysis of the qualitative dimensions of student teacher nonverbal behavior was constructed on the basis of the categorizations of gestural behaviors and terms descriptive of qualities evoked by that behavior. These categorizations show that particular gestural behaviors evoke particular qualities that are classifiable on a continuum from supportive to unsupportive and are reflected in the over all qualitative behavior of student teachers. This is demonstrated by analysis of the data obtained

by simultaneous application of the criteria under seven categories of gestural behavior and seven categories of terms descriptive of affective qualities to three video recordings of student teachers in art teaching-learning situations.

It is demonstrated that judges using the criteria developed for the instrument of systematic observation are able to achieve an adequate level of agreement in categorizing gestural behaviors and terms descriptive of their qualities from video recordings of student teachers in art. The patterns of gestural behaviors and reflected qualities arrived at from the categorization system used in this study is shown to be a valid representation of the qualitative dimensions of student teachers' gestural behavior in art teaching-learning situations in the sample of three video recordings.

Analysis based on frequency of observations showed that Head Motion, Body Posture, Facial Motion, and Body Motion were the predominant gestural behaviors observed in the sample of three student teachers, and that these behaviors evoked predominantly those qualities categorized as Clarifying-Directive, Receptive-Helpful, and Neutral. Further analysis revealed that the over all qualitative effect of three student teachers gestural behavior was observed to be highly supportive and only negligibly unsupportive in the contexts of art teaching-learning situations. This analysis demonstrates that gestural behavior functions as a qualitative aspect of student teacher communication in teaching-learning situations in art.

Factor analysis was used for construct validation of the instrument for systematic observation. It was found that Non-Transactional nonverbal behavior characterized by Image Reflective gesture was the predominant factor operating in the Task-setting context and all three contexts combined, while Transactional nonverbal behavior characterized by Spatial Stimulus gesture was the predominant factor operating in the Demonstration context. Transactional nonverbal behavior characterized by Interactive Stimulus gesture was found to be the significant factor operating in the Evaluation context. This analysis demonstrates that the theoretical constructs differentiating types and kinds of nonverbal behavior basic to the instrument accounts for the influence among gestural behavior categories, and that these constructs operate somewhat independently in relation to Task-setting, Demonstration, and Evaluation contexts and in relation to all three contexts combined in the art teaching-learning situations contained in the sample of three video recordings. These findings indicate that particular nonverbal gestural behaviors used by student teachers function in relation to the particular contexts comprising teaching-learning situations in art.

As a result of the various descriptive analyses employed, it is evident that several limitations in the usage of the instrument as presently constructed need to be noted. Although, as predetermined by the researcher, adequate agreement was obtained among judges to warrant proceeding with construct validation of the instrument, a limitation as to

the degree of reliability of judges' observations is recognized. No validity or reliability measures were given for the instruments of nonverbal behavior developed by other authors reported in Chapter I. (24,32) However, it is assumed that the reliability of observations for the instrument used in this study could be established at that level usually associated with instruments for analysis of teachers' verbal statements. For example, Flanders (21) reports that to achieve coefficients of observer agreement at the 85 percent level, approximately 40 hours of judge training in usage of his instrument is required. Judge training in the usage of the instrument in this study was approximately 16 hours. It is believed that judge training sessions of longer duration would result in coefficients of observer agreement comparable to those achieved in analysis of teachers' verbal statements in other studies.

Limitations in the categorizations of gestural behaviors are also evident. It is assumed that types and kinds of nonverbal behavior would function with a greater degree of independence relative to contextual situations if, for gestural behavior categories, Eye Contact were subsumed under Facial Motion and Head Motion were subsumed under Body Posture. Also, it is believed that further investigation of the gestural behaviors categorized as Body Motion is warranted to ascertain whether certain of these behaviors should be subsumed under the Body Posture category.

Additional limitations may derive from the use of the video recorder as a method for the collection of behavioral data. Since the "live" situation is contained in the video recording, the same data is consistently available to all observers. This constitutes a distinct advantage in the analysis of nonverbal behavior characterized by patterned body motions which function as a continua in time. By eliminating the auditory modality, student teachers' verbal statements characterized by qualitative aspects of pitch, tone or emotion, did not influence the judges in their analysis of teachers' gestural behaviors. However, these types of "control" over the data delimit the instrument's applicability for systematic analysis of nonverbal behavior in the "live" art teaching-learning situation. Another limitation of the video recorder in this study may be due to the inflexibility of camera locations in the classroom, posing the possibility of eliminating significant aspects of behavior desirable for analysis.

In summary, the constructs basic to the development of the categorization of the qualities of gestural behavior for systematic analysis and observation of student teachers within contexts of art teaching-learning situations provide a valid index of this dimension of student teacher communication. In terms of the results of this study, Birdwhistell's theory of Social Kinesics is a useful theoretical construct for analyzing student teachers' nonverbal behavior in art teaching-learning situations.

Implications for Education

Student teachers' nonverbal behaviors are classifiable as to type and kind and are shown to be an objective aspect of the communication behavior of student teachers in art teaching-learning situations. This is useful information as it provides a way of objectively describing the qualitative communication function of particular types and kinds of nonverbal behaviors used by student teachers within contexts of teaching-learning situations in art. The importance of these findings to education is that they serve as a theoretical basis for defining those properties of nonverbal communication behavior which have not previously been studied.

Another important consideration is that the function of qualitative nonverbal behavior is not unlike that of communication in the visual arts. It is assumed that the way teachers behave in teaching art is dependent on how teachers desire learners to behave. Within contexts of the art teaching-learning situation the qualitative has priority over the theoretical. Qualitative referents and objects are used in communication where words will not suffice. It may be only to the extent that student teachers are able to control qualitative behavioral referents supportive of pupils in the contexts of the art teaching-learning situation that they will be able to assure desirable qualitative levels of pupil experiences in their encounters with art. Strategies of teaching art based on qualitative nonverbal behavior may prove to have more applicability than other more traditional approaches used in the education of art teachers.

The findings of this study indicate that the qualitative dimensions of nonverbal behaviors are a prominent aspect of student teachers' communication behavior in art. It is evident, though, that student teachers need to be aware of both their verbal and nonverbal communication behavior. Predominant systems for analysis of teacher verbal communication reflect the importance of this aspect of teacher communication behavior in their interpersonal relations with pupils. However, as Hill (29) notes, the communication of art teachers needs to be characterized by qualitative predominance whereby reciprocity takes place as the qualitative act is taught by means of interrelating theoretical and qualitative symbols. The implication of these findings for education is that the criteria for systematic analysis of nonverbal behavior developed in this study have applicability to teachers in all fields of education. Cognizance by teachers of both the visual and verbal aspects of communication behavior may enhance their ability to more effectively relate to all pupils in teaching-learning situations. This analysis may be particularly appropriate to those situations consisting of pupils from diverse socio-cultural backgrounds who are more apt to attend to the nonverbal rather than the verbal aspects of teacher communication.

The conclusions of this study suggest that there is an additional body of knowledge that can be learned by prospective art teachers which may condition the way they see themselves in their interpersonal relations with their pupils. As such, qualitative nonverbal behavior may be examined as a potentially fruitful additional dimension in art teacher education programs.

Recommendations for Further Research

1. The instrument for systematic observation developed in this study needs to be re-examined relative to particular categorizations of gestural behaviors and terms descriptive of qualities. The data suggests that by combining the two categories of Eye Contact and Facial Motion and the two categories of Head Motion and Body Posture, these gestural behaviors would function with greater independence in the differing contexts of the art teaching-learning situation. Further examination of the Neutral category of terms descriptive of qualities is warranted as the percentage of judge agreement for this category was consistently lower than for all other categories of terms descriptive of qualities. The notions that (a) behaviors that evoke qualities could not be "neutral" in their affect or (b) that routine behaviors as defined in this study may be more accurately perceived as "supportive" in the art teaching-learning situation than "neutral" indicates the need for this category to be eliminated from the instrument. It is recommended that the criteria of an instrument for systematic observation with these refinements be applied to a representative sample of teachers in art teaching-learning situations over periods of time by different observers at different times to ascertain the objectivity of the instrument in measuring the phenomena under investigation.

2. To further ascertain the reliability of the instrument for systematic observation it is recommended that studies be conducted to determine (a) the size of an adequate sample of eipsodes of gestural behavior to ascertain stability in the pattern of reflected qualities of the teacher, i.e., supportive or unsupportive qualitative effect in the art teaching-learning situation; and (b) the consistency in the pattern of the qualities evoked by gestural behaviors from parallel samples of the contexts comprising art teaching-learning situations from different class sessions of the same teacher.

3. It is recommended that validation studies be conducted based on a comparison of the results obtained by application of criterion instruments of known reliability and validity with the results obtained by the application of the criteria of the instrument for systematic observation of nonverbal behavior to the same data.

4. To further determine validity of the instrument, the criteria established by the kind of research in the preceeding recommendation should then be applied to various representative samples of both student teachers and mature teachers. These studies would include student

teachers and mature teachers of art, as well as of other subject fields, at several public school educational levels and in diverse socio-cultural educational environments to determine if differing patterns of gestural behavior and their qualitative effects can be ascertained. Such cross validation studies may lead to the development of comparative descriptive data concerning the qualitative dimension of teachers' nonverbal behavior relative to degree of teaching experience, and to diverse socio-cultural environments at various educational levels across the several subject fields.

5. The data obtained from the usage of the instrument for systematic observation in this study yielded evidence supporting its applicability in the description of the qualities of student teacher nonverbal communication behavior in the art teaching-learning situation. It is recommended that further studies be designed to determine the suitability of the instrument as an evaluative device in assessing the qualitative dimension of student teacher nonverbal communication behavior. These studies may lead to the development of an instrument that would be useful in programs for the preparation of art teachers and for the self-evaluation of in-service mature art teachers realtive to the contexts of art teaching-learning situations.

6. It would be useful for further research to investigate techniques for the systematic analysis of both the visual and verbal aspects of teachers' qualitative communication behavior based on the theoretical constructs used in this study. Such analysis may lead to the development of objective measures for the description of the interrelationships of teachers' visual and verbal qualitative behavior in order to determine whether or not these behaviors are congruent or incongruent in their qualitative effects within contexts of art teaching-learning situations. Such findings might then have applicability to the "live" classroom situation.

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APPENDIX A

INSTRUMENT FOR VERIFICATION OF THE TYPOLOGY OF NONVERBAL BEHAVIOR

A 0	FACIAL MOVEMENT	I	II	III
A 1	Eye Focus: Individual			
A 2	Group			
A 3	Class			
A 4	Object			
A 5	Board			
A 6	Downcast			
A 7	Avoiding			
A 8	Raised Eyebrow/s			
A 9	Wink			
A10	Grin			
A11	Slight Smile			
A12	Full Smile			
A13	Laugh			
A14	Frown			
A15	Grimace			
A16	Pout			
T				

B 0	HEAD MOVEMENT	I	II	III
B 1	Slight Nod/s			
B 2	Full Nod/s			
B 3	Inclined to R or L side			
B 4	Turns to R or L			
B 5	Turns R-L or L-R Repeatedly			
T				

C 0	BODY MOVEMENT	I	II	III
C 1	Stands			
C 2	Sits			
C 3	Slouches			
C 4	Leans			
C 5	Stoops			
C 6	One Hand on Hip			
C 7	Both Hands on Hip			
C 8	Arms Folded			
C 9	Shrugs Shoulders			
C10	Hands Clasped			
C11	Chin in Hand/s			

		I	II	III
C12	Shifts Weight R or L			
C13	Turns from Waist R or L			
C14	Bends from Waist Fwd. or Bk.			
C15	Steps-Turns R or L			
C16	Steps-Turns Completely			
C17	Walks To: Individual			
C18	Group			
C19	Class			
C20	Object			
C21	Board			
C22	Backs Away From: Individual			
C23	Group			
C24	Class			
C25	Object			
C26	Board			
C27	Turns Away From: Individual			
C28	Group			
C29	Class			
C30	Object			
C31	Board			
C32	Circulates			
C33	Paces			
T				

D 0	ARM, HAND, FINGER MOVEMENT	I	II	III
D 1	One Arm, Hand			
D 2	Both Arms, Hands			
D 3	Up or Down			
D 4	Fwd. or Bk.			
D 6	At Side of Body			
D 7	Across Body			
D 8	In front of Body			
D 9	Partial Fist			
D10	Closed Fist			
D11	Palm/s Out			
D12	Palm/s In to Body			
D13	Palm/s Up			
D14	Palm/s Down			

D15	Palm/s Vertical	I	II	III
D16	Fingers Extended			
D17	Index Finger Ext.			
D18	Other Finger Position			
D19	To: Individual			
D20	Group			
D21	Class			
D22	Object			
D23	Board			
D24	Hair			
D25	Facial Features			
D26	Neck			
D27	Torso			
D28	Leg/s - Ft.			
D29	Arm			
D30	Clothing			
T				

DDO	CHARACTERISTIC ARM, HAND, FINGER MOVEMENTS	I	II	III
DD1	Pointing			
DD2	Pointing with Sweep/s			
DD3	Pointing with Loop/s			
DD4	Partial Sweep/s			
DD5	Full Sweep/s			
DD6	Partial Loop/s			
DD7	Full Loop/s			
DD8	R-L or L-R			
DD9	Up and Down			
DD10	Forward and Back			
DD11	Touching: Self			
DD12	Individual			
DD13	Object			
DD14	Board			
DD15	Individual's Object/ Work			
DD16	Writing/Drawing on Board			
DD17	Manipulating Object/s			
DD18	Grasping-Holding			
T				

APPENDIX A (Continued)

E 0	REFLECTED TEACHER QUALITIES	I	II	III
E 1	Accepting			
E 2	Clarifying			
E 3	Competent			
E 4	Demonstrating			
E 5	Directing			
E 6	Encouraging			
E 7	Recognizing			
E 8	Self Confident			
E 9	Supportive			
E10	Neutral			
E11	Boring			
E12	Commanding			
E13	Disapproving			
E14	Fearful			
E15	Hesitant			
E16	Threatening			
E17	Unsupportive			
T				

TAPE _____ CLASS_____ OBSVR. _____

NO. _____ DATE _____

APPENDIX B

INSTRUMENT FOR SYSTEMATIC OBSERVATION OF NONVERBAL BEHAVIOR

EYE CONTACT	FACIAL MOTION	HEAD MOTION	BODY POSTURE
0 1 2 3 4 5 6 7	0 1 2 3 4 5 6 7	0 1 2 3 4 5 6 7	0 1 2 3 4 5 6 7
0 1 2 3 4 5 6 7	0 1 2 3 4 5 6 7	0 1 2 3 4 5 6 7	0 1 2 3 4 5 6 7
0 1 2 3 4 5 6 7	0 1 2 3 4 5 6 7	0 1 2 3 4 5 6 7	0 1 2 3 4 5 6 7
0 1 2 3 4 5 6 7	0 1 2 3 4 5 6 7	0 1 2 3 4 5 6 7	0 1 2 3 4 5 6 7
0 1 2 3 4 5 6 7	0 1 2 3 4 5 6 7	0 1 2 3 4 5 6 7	0 1 2 3 4 5 6 7
0 1 2 3 4 5 6 7	0 1 2 3 4 5 6 7	0 1 2 3 4 5 6 7	0 1 2 3 4 5 6 7
0 1 2 3 4 5 6 7	0 1 2 3 4 5 6 7	0 1 2 3 4 5 6 7	0 1 2 3 4 5 6 7
0 1 2 3 4 5 6 7	0 1 2 3 4 5 6 7	0 1 2 3 4 5 6 7	0 1 2 3 4 5 6 7
0 1 2 3 4 5 6 7	0 1 2 3 4 5 6 7	0 1 2 3 4 5 6 7	0 1 2 3 4 5 6 7
0 1 2 3 4 5 6 7	0 1 2 3 4 5 6 7	0 1 2 3 4 5 6 7	0 1 2 3 4 5 6 7
0 1 2 3 4 5 6 7	0 1 2 3 4 5 6 7	0 1 2 3 4 5 6 7	0 1 2 3 4 5 6 7
0 1 2 3 4 5 6 7	0 1 2 3 4 5 6 7	0 1 2 3 4 5 6 7	0 1 2 3 4 5 6 7
0 1 2 3 4 5 6 7	0 1 2 3 4 5 6 7	0 1 2 3 4 5 6 7	0 1 2 3 4 5 6 7
0 1 2 3 4 5 6 7	0 1 2 3 4 5 6 7	0 1 2 3 4 5 6 7	0 1 2 3 4 5 6 7
0 1 2 3 4 5 6 7	0 1 2 3 4 5 6 7	0 1 2 3 4 5 6 7	0 1 2 3 4 5 6 7

TAPE _____ OBSERVATION _____ NO. _____

APPENDIX B (Continued)

BODY MOTION	ARM HAND FINGER MOTION	DIRECTED ARM HAND FINGER MOTION	T
0 1 2 3 4 5 6 7	0 1 2 3 4 5 6 7	0 1 2 3 4 5 6 7	
0 1 2 3 4 5 6 7	0 1 2 3 4 5 6 7	0 1 2 3 4 5 6 7	
0 1 2 3 4 5 6 7	0 1 2 3 4 5 6 7	0 1 2 3 4 5 6 7	
0 1 2 3 4 5 6 7	0 1 2 3 4 5 6 7	0 1 2 3 4 5 6 7	
0 1 2 3 4 5 6 7	0 1 2 3 4 5 6 7	0 1 2 3 4 5 6 7	
0 1 2 3 4 5 6 7	0 1 2 3 4 5 6 7	0 1 2 3 4 5 6 7	
0 1 2 3 4 5 6 7	0 1 2 3 4 5 6 7	0 1 2 3 4 5 6 7	
0 1 2 3 4 5 6 7	0 1 2 3 4 5 6 7	0 1 2 3 4 5 6 7	
0 1 2 3 4 5 6 7	0 1 2 3 4 5 6 7	0 1 2 3 4 5 6 7	
0 1 2 3 4 5 6 7	0 1 2 3 4 5 6 7	0 1 2 3 4 5 6 7	
0 1 2 3 4 5 6 7	0 1 2 3 4 5 6 7	0 1 2 3 4 5 6 7	
0 1 2 3 4 5 6 7	0 1 2 3 4 5 6 7	0 1 2 3 4 5 6 7	
0 1 2 3 4 5 6 7	0 1 2 3 4 5 6 7	0 1 2 3 4 5 6 7	
0 1 2 3 4 5 6 7	0 1 2 3 4 5 6 7	0 1 2 3 4 5 6 7	
0 1 2 3 4 5 6 7	0 1 2 3 4 5 6 7	0 1 2 3 4 5 6 7	
0 1 2 3 4 5 6 7	0 1 2 3 4 5 6 7	0 1 2 3 4 5 6 7	
0 1 2 3 4 5 6 7	0 1 2 3 4 5 6 7	0 1 2 3 4 5 6 7	
0 1 2 3 4 5 6 7	0 1 2 3 4 5 6 7	0 1 2 3 4 5 6 7	

DATE _____

APPENDIX C

CATEGORIES FOR OBSERVING STUDENT TEACHER'S NONVERBAL BEHAVIOR

A EYE CONTACT

- Student
- Group
- Class
- Board/Object
- Avoiding
- Downcast

B FACIAL MOTION

- Raised Eyebrow/s
- Grin
- Slight Smile
- Full Smile
- Laugh
- Frown
- Grimace/Pursed Lips

C HEAD MOTION

- Nod/s
- Inclined
- Turns Head to R or L
- Turns "NO"

D BODY POSTURE

- Stands
- Sits
- Leans
- Slouches
- Arm/s Folded
- Hands Clasped
- Hand/s on Hip/s

F ARM HAND FINGER MOTION

- One Arm Hand
- Both Arms Hands
- At Side of Body
- In Front of Body
- Across Body
- Away from Body
- Toward Body
- R - L or L - R
- Up and Down
- Loop/s
- Sweep/s
- Palm/s Out from Body
- Palm/s In to Body
- Palm/s Down
- Palm/s Up
- Palm/s Vertical
- Partial Fist
- Closed Fist
- All Fingers Extended
- Index Finger Extended
- Other Finger Position

G DIRECTED ARM HAND FINGER MOTION

- One Arm Hand
- Both Arms Hands
- Pointing to Self
- Pointing to Student
- Pointing to Group/Class
- Pointing to Board/Object
- Touching Self
- Touching Board/Object
- Grasping/Holding Object
- Manipulating Object
- Writing/Dwg. on Board

E BODY MOTION

Shifts Weight
Shrugs Shoulders
Bends from Waist
Turns from Waist
Walks to Student
Walks to Group
Walks to Board/Object
Circulates
Paces

APPENDIX D

TABLE XXV

CONTINGENCY COEFFICIENTS FOR EACH JUDGE AND THE RESEARCHER IN CATEGORIZATION OF REFLECTED QUALITIES AND GESTURAL BEHAVIORS OF TEACHER 1

Categories Gestural Behavior	J1 with J2	J1 with J3	J1 with J4	J1 with J5	J1 with J6	J1 with J7
A Eye Contact	.76	.65	.61	.64	.57	.59
B Facial Motion	.76	.68	.70	.59	.52	.57
C Head Motion	.79	.73	.66	.66	.60	.70
D Body Posture	.78	.73	.71	.72	.68	.68
E Body Motion	.68	.53	.61	.61	.45	.68
F Arm-Hand-Finger Motion	.68	.45	.60	.69	.67	.62
G Directed Arm-Hand Finger Motion	.73	.57	.64	.54	.65	.69

APPENDIX D (Continued)

TABLE XXVI

CONTINGENCY COEFFICIENTS FOR EACH JUDGE AND THE RESEARCHER IN CATEGORIZATION OF REFLECTED QUALITIES AND GESTURAL BEHAVIORS OF TEACHER 2

Categories Gestural Behavior	J1 with J2	J1 with J3	J1 with J4	J1 with J5	J1 with J6	J1 with J7
A Eye Contact	.82	.68	.71	.54	.56	.67
B Facial Motion	.82	.71	.79	.58	.66	.70
C Head Motion	.85	.55	.64	.74	.68	.61
D Body Posture	.86	.71	.76	.73	.73	.57
E Body Movement	.84	.66	.70	.60	.66	.60
F Arm-Hand-Finger Motion	.63	.57	.62	.49	.79	.60
G Directed Arm-Hand-Finger Motion	.72	.61	.64	.61	.66	.64

APPENDIX D (Continued)

TABLE XXVII

CONTINGENCY COEFFICIENTS FOR EACH JUDGE AND THE RESEARCHER IN CATEGORIZATION OF REFLECTED QUALITIES AND GESTURAL BEHAVIORS OF TEACHER 3

Categories Gestural Behavior	J1 with J2	J1 with J3	J1 with J4	J1 with J5	J1 with J6	J1 with J7
A Eye Contact	.71	.67	.69	.59	.59	.66
B Facial Motion	.78	.69	.73	.70	.72	.65
C Head Motion	.80	.61	.56	.57	.58	.59
D Body Posture	.80	.60	.55	.52	.52	.61
E Body Motion	.72	.56	.54	.49	.43	.60
F Arm-Hand-Finger Motion	.52	.47	.61	.63	.57	.65
G Directed Arm-Hand-Finger Motion	.82	.57	.43	.59	.70	.69

APPENDIX E

ILLUSTRATIONS OF THE TYPOLOGY OF NONVERBAL BEHAVIOR OF STUDENT TEACHERS WITHIN CONTEXTS OF ART TEACHING-LEARNING SITUATIONS

The typology of nonverbal behavior of student teachers in art teaching-learning situations formulated in this study is as follows:

Transactional Nonverbal Behavior

(Interactive and Spatial Stimulus Gestures)

Eye Contact
Facial Motion
Body Motion
Arm-Hand-Finger Motion
Directed Arm-Hand-Finger Motion

Non-Transactional Nonverbal Behavior

(Image Reflective Gestures)

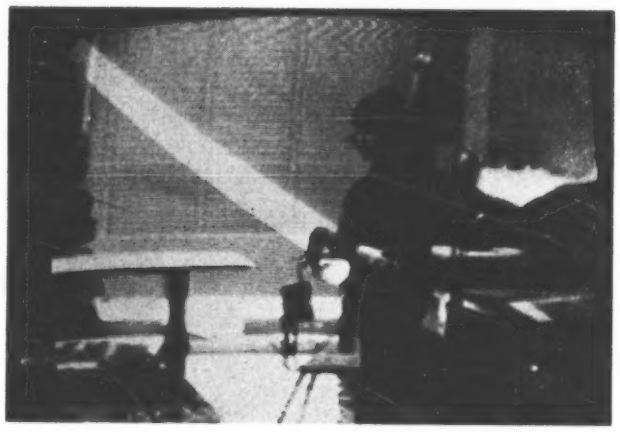
Head Motion
Body Posture
Directed Arm-Hand-Finger Motion

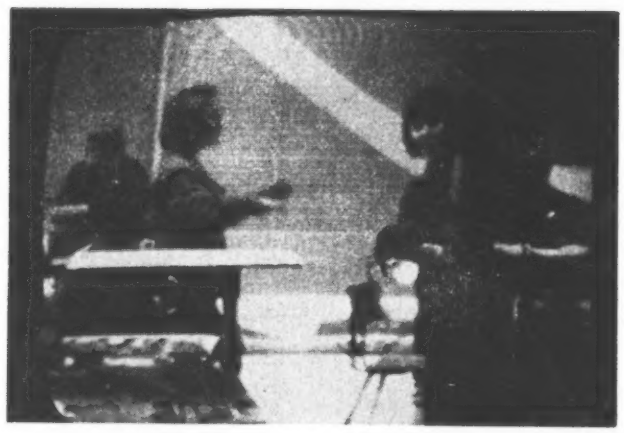
Figures 6, 7, 8, 9 and 10 illustrate examples of the typology of nonverbal behavior derived from the analysis of video recorded samples of student teachers in art teaching-learning situations utilized in this study. The figures represent student teachers' nonverbal behavior within the contexts of art teaching-learning situations as defined in this study, namely: In process Task setting, In process Demonstration and In process Evaluation.

Fig. 6. Non-transactional nonverbal behavior / Image reflective gestures: Task-setting context.

Fig. 7. Transactional nonverbal behavior / Interactive and spatial stimulus gestures: Demonstration context.

Fig. 8. Non-transactional nonverbal behavior / Image Reflective gestures: Task-setting context.





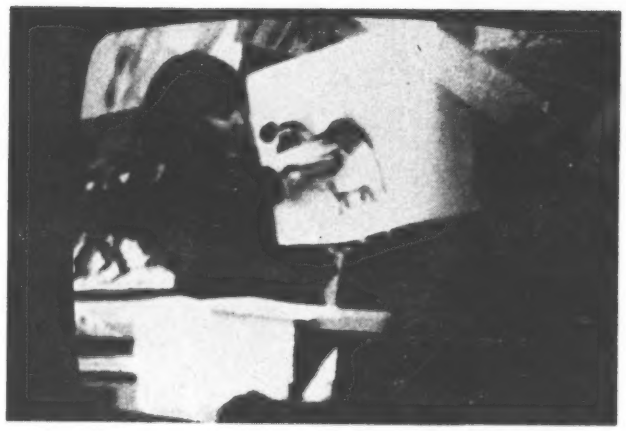


Fig. 9. Transactional nonverbal behavior / Interactive and spatial stimulus gestures: Demonstration context.

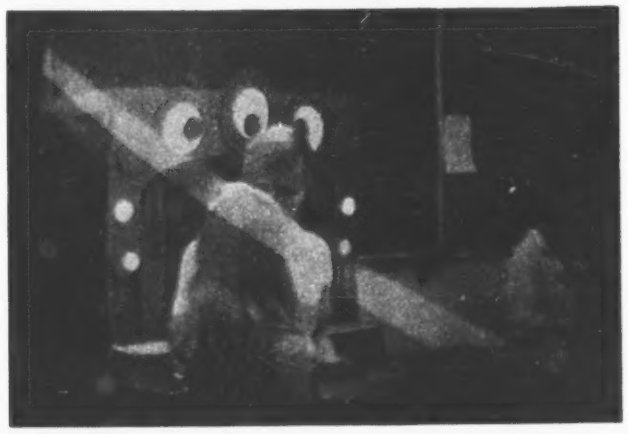


Fig. 10. Transactional nonverbal behavior / Interactive and spatial stimulus gestures: Evaluation context.